

=> d que 136

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L8      919149 SEA FILE=REGISTRY ABB=ON  PLU=ON  (P(L)N)/ELS
L10     895682 SEA FILE=REGISTRY ABB=ON  PLU=ON  L8 NOT PMS/CI
L11     2814   SEA FILE=REGISTRY ABB=ON  PLU=ON  L10 AND 46.716/RID AND
        46.150/RID
L12     15     SEA FILE=REGISTRY ABB=ON  PLU=ON  L11 AND LI/ELS
L17     105    SEA FILE=REGISTRY ABB=ON  PLU=ON  L10 AND IMINOIMIDODIPHOSP
        HORAMID?
L18     1      SEA FILE=REGISTRY ABB=ON  PLU=ON  L17 AND LI/ELS
L27     13     SEA FILE=HCAPLUS  ABB=ON  PLU=ON  L12
L28     1      SEA FILE=HCAPLUS  ABB=ON  PLU=ON  L18
L29     13     SEA FILE=HCAPLUS  ABB=ON  PLU=ON  L27 OR L28
L30     45     SEA FILE=HCAPLUS  ABB=ON  PLU=ON  L17
L31     3      SEA FILE=HCAPLUS  ABB=ON  PLU=ON  L30 AND LITHIUM
L32     15     SEA FILE=HCAPLUS  ABB=ON  PLU=ON  L29 OR L31
L33     1      SEA FILE=HCAPLUS  ABB=ON  PLU=ON  L30 AND ELECTROLYT?
L34     QUE ABB=ON  PLU=ON  BATTERY? OR BATTERIES OR ELECTRODE#
        OR CATHODE# OR ANODE#
L35     1      SEA FILE=HCAPLUS  ABB=ON  PLU=ON  L30 AND L34
L36     15     SEA FILE=HCAPLUS  ABB=ON  PLU=ON  L32 OR L33 OR L35

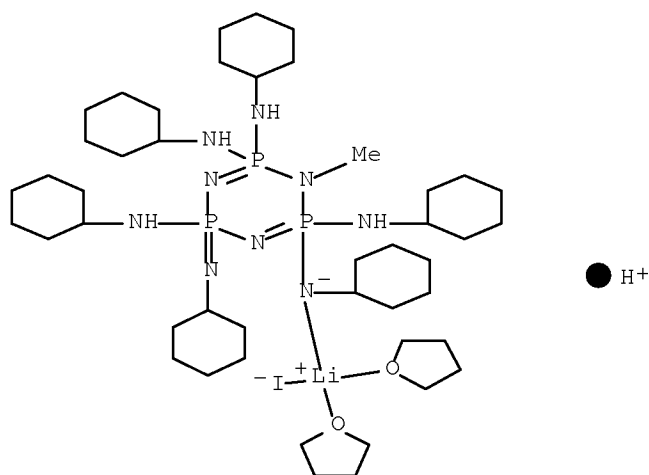
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=> d 136 1-15 ibib ed abs hitstr hitind

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L36  ANSWER 1 OF 15  HCAPLUS  COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER:      2007:1048715  HCAPLUS  Full-text
DOCUMENT NUMBER:      147:522398
TITLE:                Zwitterionic phosphazanium phosphazenate ligands
AUTHOR(S):            Benson, Mark A.; Ledger, Joanne; Steiner,
                        Alexander
CORPORATE SOURCE:     Department of Chemistry, University of Liverpool,
                        Liverpool, L69 7ZD, UK
SOURCE:               Chemical Communications (Cambridge, United
                        Kingdom) (2007), (37), 3823-3825
                        CODEN: CHCOFS; ISSN: 1359-7345
PUBLISHER:            Royal Society of Chemistry
DOCUMENT TYPE:        Journal
LANGUAGE:             English
OTHER SOURCE(S):      CASREACT 147:522398
ED   Entered STN:     19 Sep 2007
AB   Zwitterionic ligands are readily prepared from phosphazenes (RNH)6P3N3 by
      successive alkylation of ring nitrogen sites and deprotonation of exocyclic NH
      sites. The crystal structure of deprotonation products were determined
IT   956597-17-4P
      (crystal structure; preparation and structural characterization of
      zwitterionic phosphazanium phosphazenate ligands)
RN   956597-17-4  HCAPLUS
CN   Lithate(1-), iodo[N2,N2',N4,N4',N6-pentacyclohexyl-6-(cyclohexylimino)-
      3,6-dihydro-3-methyl-2λ5,4λ5,6λ5-1,3,5,2,4,6-
      triazatriphosphorine-2,2,4,4,6-pentaminato-
      κN2]bis(tetrahydrofuran)-, hydrogen (1:1), (T-4)- (CA INDEX
      NAME)

```



CC 29-14 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 75

IT 956597-16-3P 956597-17-4P

(crystal structure; preparation and structural characterization of zwitterionic phosphazanium phosphazenate ligands)

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 2 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:3212 HCAPLUS Full-text

DOCUMENT NUMBER: 140:62300

TITLE: Supporting salt for battery, its manufacture, and the battery

INVENTOR(S): Otsuki, Masashi; Eguchi, Shinichi; Kanno, Hiroshi

PATENT ASSIGNEE(S): Bridgestone Corporation, Japan

SOURCE: PCT Int. Appl., 83 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004001882	A1	20031231	WO 2003-JP7352	20030610
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
AU 2003242210	A1	20040106	AU 2003-242210	20030610
EP 1517387	A1	20050323	EP 2003-736121	20030610
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,			

10/518,634

PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
 CN 1669165 A 20050914 CN 2003-817186 20030610
 US 20050164093 A1 20050728 US 2004-518634 20041220
 PRIORITY APPLN. INFO.: JP 2002-178693 A 20020619
 JP 2002-178772 A 20020619
 WO 2003-JP7352 W 20030610

OTHER SOURCE(S): MARPAT 140:62300

ED Entered STN: 02 Jan 2004

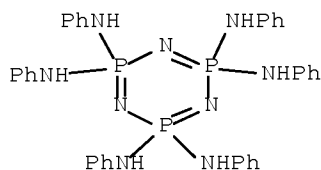
AB The salt comprises a phosphazene compound (NPA12)3 (I) or Al3P:NP(O)Al2 (II; Al = NRLi or F where ≥1 Al is NRLi and R = monovalent substituent) and I is manufactured by forming a phosphazene derivative by reacting a fluoro or chloro phosphazene derivative with a primary amine and adding Li alkoxide to form the compound and II is manufactured by forming a phosphazene derivative by reacting a chloro or fluoro phosphazene derivative with a primary amine and adding Li alkoxide to form the compound. The battery has a cathode, an anode, and a nonaq. electrolyte solution containing an aprotic organic solvent and the above salt. Another type of the battery has an electrolyte containing a polymer and the above salt.

IT 134435-36-2 639065-14-8 639065-15-9
 639067-35-9

(manufacture of supporting salts containing phosphazene derivs. for battery electrolytes)

RN 134435-36-2 HCAPLUS

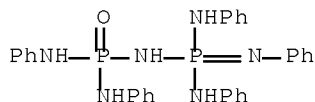
CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexahydro-2,2,4,4,6,6-hexakis(phenylamino)-, hexalithium salt (9CI) (CA INDEX NAME)



●6 Li

RN 639065-14-8 HCAPLUS

CN Iminoimidodiphosphoramidate, N,N',N'',N''',N''''-pentaphenyl-, pentalithium salt (9CI) (CA INDEX NAME)



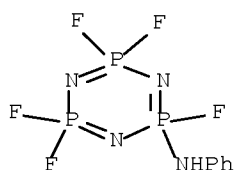
●5 Li

RN 639065-15-9 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorin-2-amine, 2,4,4,6,6-pentafluoro-N-

10/518,634

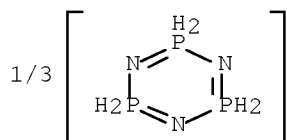
phenyl-, lithium salt (1:1) (CA INDEX NAME)



● Li

RN 639067-35-9 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, trifluoro-2,2,4,4,6,6-hexahydrotris(phenylamino)-, trilithium salt (9CI) (CA INDEX NAME)



D1-F

D1-NH-Ph

●³ Li

IC ICM H01M006-16

ICS H01M006-18; H01M010-40; H01B001-06; C07F019-00; C07F009-26; C07F009-6593; C07F001-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 29

ST battery electrolyte salt manuf phosphazene deriv

IT Polyoxyalkylenes, uses

(manufacture of supporting salts containing phosphazene derivs. for battery electrolytes)

IT 7439-93-2, Lithium, uses

(anode; manufacture of supporting salts containing phosphazene derivs. for battery electrolytes)

IT 1313-13-9, Manganese dioxide, uses 52627-24-4, Cobalt lithium oxide

(cathode; manufacture of supporting salts containing phosphazene derivs. for battery electrolytes)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4 25322-68-3, Polyethylene oxide 33027-66-6 55593-38-9 134435-36-2 485399-26-6 593094-52-1 639065-14-8 639065-15-9 639067-35-9 639067-36-0 639067-37-1

(manufacture of supporting salts containing phosphazene derivs. for battery electrolytes)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L36 ANSWER 3 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:667444 HCAPLUS Full-text

DOCUMENT NUMBER: 136:37660

TITLE: Intrinsic basicities of phosphorus imines and
ylides: a theoretical study

AUTHOR(S): Koppel, Ilmar A.; Schwesinger, Reinhard; Breuer,
Thomas; Burk, Peeter; Herodes, Koit; Koppel, Ivar;
Leito, Ivo; Mishima, Masaaki

CORPORATE SOURCE: Institute of Chemical Physics Department of
Chemistry, University of Tartu, Tartu, 51014,
Estonia

SOURCE: Journal of Physical Chemistry A (2001), 105(41),
9575-9586

CODEN: JPCAFH; ISSN: 1089-5639

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 13 Sep 2001

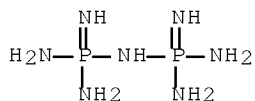
AB A d. functional theory (B3LYP/6-311+G**), ab initio (HF/3-21G*), and
semiempirical (PM3) study of intrinsic basicities, protonation energies, or
protonation enthalpies of organic P imine (iminophosphorane) including
phosphazene, P ylide (phosphorane), and phosphine superbases was performed.
The study shows that representatives of the 1st two classes of the above-
mentioned organic superbases can reach the basicity level of the strongest
inorg. superbases such as alkali-metal hydroxides, hydrides, and oxides. The
strongest organic phosphazene imine superbases are predicted to reach the gas-
phase basicity level of .apprx.300 kcal/mol (number of P atoms in the system n
 ≥ 7), whereas the strongest organic phosphazene ylide superbases have (at $n \geq$
5) gas-phase basicities around or beyond 310-320 kcal/mol. The phosphine
superbases, including the J. G. Verkade's bicyclic phosphines
(proazaphosphatranes) are predicted to have a basicity comparable to P2
phosphazenes or P1 P ylides, whereas the resp. proazaphosphatrane imines and
ylides are expected to be the strongest organic superbases which contain only
a single P atom. Extremely high expected basicity values and handling
preferences over inorg. superbases make representatives of novel organic
superbases possible partners for observing the spontaneous gas-phase proton
transfer between neutral Bronsted superacids and -bases. For the comparison,
the basicities of some alkali-metal substituted NH3, phosphine, P, and N
ylides and imines were also calculated

IT 67891-65-0, Diiminoimidodiphosphoramide 376651-59-1

(theor. study of intrinsic basicities of phosphorus imines and
ylides and related mols.)

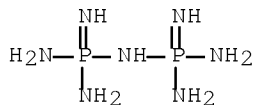
RN 67891-65-0 HCAPLUS

CN Diiminoimidodiphosphoramide (9CI) (CA INDEX NAME)



RN 376651-59-1 HCAPLUS

CN Diiminoimidodiphosphoramide, conjugate monoacid (9CI) (CA INDEX NAME)



- CC 29-7 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 22, 65, 78
- IT 69006-25-3, Lithium oxide ion (Li3O1+) 83560-69-4,
Lithium nitride ion (Li4N1+) 376651-41-1
(energy, enthalpy and free energy of)
- IT 12057-24-8, Dilithium oxide, properties 26134-62-3, Trilithium
nitride
(lithium cation basicity of)
- IT 14700-19-7, Triaminophosphine imide
(proton and lithium cation basicities; theor. study of
intrinsic basicities of phosphorus imines and ylides and related
mols.)
- IT 51-92-3, Tetramethylammonium 74-85-1, Ethene, properties 80-70-6,
N,N,N',N'-Tetramethylguanidine 113-00-8, Guanidine 115-11-7,
Isobutene, properties 143-37-3, Acetamidine 463-52-5,
Methanimidamide 593-54-4, Methylphosphine 594-09-2,
Trimethylphosphine 1608-26-0, Hexamethylphosphorous triamide
2053-29-4, Methanimine 3487-44-3, Methylenetriphenylphosphorane
4112-23-6, Dimethyl(methylene)silane 4363-36-4, 1,1-Diaminoethene
7803-51-2, Phosphine (PH3) 12057-29-3, Trilithium phosphide
13566-19-3, Phosphorous triamide 14580-91-7,
Trimethyl(methylene)phosphorane 14616-59-2, Sulfilimine 14804-25-2
14936-94-8, Ethylum 15107-02-5, Iminotrimethylphosphorane
16749-13-6, Phosphonium 16950-21-3 17000-00-9, Methylammonium
17341-24-1, Lithium(1+), properties 17836-08-7,
Methyloxonium 18500-32-8, Hydrazinium(1+) 18683-23-3,
Methylsulfonium 19287-79-7, Trimethylphosphonium 19497-20-2
20729-41-3, Ethanamine 20770-41-6, Tripotassium phosphide
21259-15-4, ((Dimethylphosphino)imino)trimethylphosphorane
25215-10-5, Guanidinium 25682-80-8, Iminophosphorane 28602-10-0,
Methylphosphonium 28706-85-6, Tris(dimethylamino)(methylene)phosphorane
28927-31-3, Trimethylsilylium 28963-72-6 29212-32-6,
1,4-Dihydro-4-iminopyridine 32589-80-3, Tetramethylphosphonium
33825-39-7 34858-93-0, Trihydrazino(imino)phosphorane 36429-11-5,
Methylenephosphorane 38697-07-3, 2-Propanimine 48055-22-7
49778-01-0, Tris(dimethylamino)(imino)phosphorane 49778-04-3,
Tris(dimethylamino)(methylimino)phosphorane 50676-76-1 52018-42-5
52900-33-1 59991-87-6 62399-23-9 65324-95-0,
(Methylimino)phosphorane 67891-65-0,
Diiminoimidodiphosphoramide 80805-16-9, (tert-Butylimino)phosphorane
81269-78-5 81675-81-2, (tert-Butylimino)tris(dimethylamino)phosphorane
85199-24-2 85567-68-6, Triamino[(diaminophosphino)imino]phosphorane
88392-38-5 88392-40-9 111324-00-6 111324-03-9
111324-04-0, (tert-Butylimino)tris((tris(dimethylamino)phosphoranylide
ne)amino)phosphorane 111324-08-4 121158-73-4 123597-04-6,

10/518,634

1,4-Dihydro-4-methylenepyridine 130854-40-9 157355-47-0
159641-58-4 159641-59-5 159641-60-8 159641-61-9 172272-33-2
181016-71-7, (Diaminosilylene)amine 185118-57-4,
Triamino(methylene)phosphorane 227103-04-0, Diamino(methylene)silane
290815-10-0 323194-32-7 376650-58-7 376650-59-8 376650-60-1
376650-61-2, Triamino(methylimino)phosphorane 376650-64-5
376650-65-6, Sulfur amide imide (S(NH₂)₄(NH)) 376650-66-7
376650-67-8 376650-68-9 376650-69-0 376650-70-3 376650-71-4
376650-72-5 376650-73-6 376650-74-7 376650-75-8 376650-76-9
376650-77-0 376650-78-1 376650-79-2, Amino(imino)bis[(triaminophos
phoranylidene)methyl]phosphorane 376650-80-5 376650-81-6
376650-82-7 376650-83-8 376650-84-9, Iminotris[(triaminophosphoran
ylidene)amino]phosphorane 376650-85-0, Iminotris[(trimethylphosphora
nylidene)amino]phosphorane 376650-86-1,
Iminotris[(triaminophosphoranylidene)methyl]phosphorane 376650-87-2
376650-88-3 376650-89-4 376650-90-7 376650-91-8 376650-92-9
376650-93-0 376650-94-1 376650-95-2 376650-96-3 376650-97-4
376650-99-6 376651-00-2 376651-01-3, Triamino(isopropylidene)phosp
horane 376651-02-4, Trihydrazino(methylene)phosphorane 376651-03-5
376651-04-6 376651-05-7 376651-06-8 376651-07-9 376651-08-0,
(Methylene)((phosphoranylidene)amino)phosphorane 376651-09-1
376651-10-4 376651-11-5 376651-12-6 376651-13-7 376651-14-8,
Methylenetris[(phosphoranylidene)amino]phosphorane 376651-15-9
376651-16-0 376651-17-1 376651-18-2 376651-19-3 376651-20-6
376651-21-7 376651-22-8 376651-23-9 376651-24-0,
Methylenetris[(triaminophosphoranylidene)amino]phosphorane
376651-25-1, Methylenetris[(triaminophosphoranylidene)methyl]phosphora
ne 376651-26-2, Methylenetris[(trimethylphosphoranylidene)amino]phos
phorane 376651-27-3, Methylenetris[(trimethylphosphoranylidene)methy
l]phosphorane 376651-28-4 376651-29-5 376651-30-8 376651-31-9
376651-32-0 376651-33-1 376651-34-2 376651-35-3 376651-37-5,
(Phosphinoimino)phosphorane 376651-38-6,
[(Diaminophosphino)imino]phosphorane 376651-39-7 376651-40-0
376651-42-2 376651-43-3 376651-44-4 376651-45-5 376651-46-6
376651-47-7 376651-48-8 376651-49-9 376651-50-2 376651-51-3
376651-52-4 376651-53-5, Sulfur(1+), amidotetrahydro- 376651-54-6,
Sulfur(1+), pentaamido- 376651-55-7 376651-56-8 376651-57-9
376651-58-0 376651-59-1 376651-60-4 376651-61-5
376651-62-6 376651-63-7 376651-64-8 376651-65-9 376651-66-0
376651-67-1 376651-68-2 376651-69-3 376651-70-6 376651-71-7
376651-72-8, Sulfur(1+), tetraamidomethyl- 376651-73-9 376651-74-0
376651-75-1 376651-76-2 376651-77-3 376651-78-4 376651-79-5
376651-80-8 376651-81-9 376651-82-0 376651-83-1 376651-84-2
376651-85-3 376651-86-4 376651-87-5 376651-88-6 376651-89-7
376651-90-0 376651-91-1 376651-92-2 376652-76-5 379722-26-6
(theor. study of intrinsic basicities of phosphorus imines and
ylides and related mols.)

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L36 ANSWER 4 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:133496 HCAPLUS Full-text

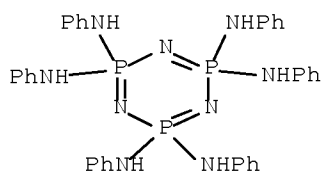
DOCUMENT NUMBER: 132:317184

TITLE: Cis-trihydrogen cyclotriphosphazenes-acidic
anions in strongly basic media

AUTHOR(S): Lawson, Gavin T.; Rivals, Frederic; Tascher,
Mathieu; Jacob, Chacko; Bickley, Jamie F.;
Steiner, Alexander

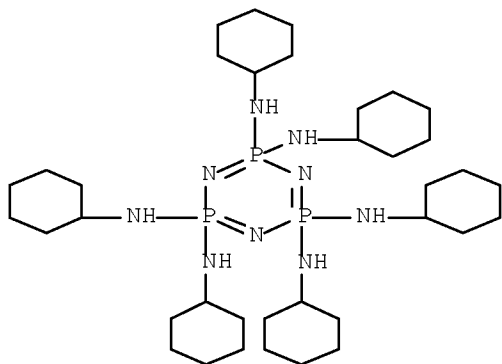
CORPORATE SOURCE: Dep. Chem., University of Liverpool, Liverpool,

SOURCE: L69 7ZD, UK
 Chemical Communications (Cambridge) (2000), (5),
 341-342
 CODEN: CHCOFS; ISSN: 1359-7345
 PUBLISHER: Royal Society of Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 ED Entered STN: 25 Feb 2000
 AB Exclusively cis-protonation occurs at axial N-atoms of chair shaped P₃N₉ ring
 cores in the protolysis of the Li salt of hexaanionic cyclotriphosphazenate
 [(CyN)₆P₃N₃]⁶⁻ (Cy = cyclohexyl) with three equivalent of butan-1-ol. Cis-
 deprotonation takes place at the hexaprotic cyclotriphosphazene (PhNH)₆P₃N₃
 with three equivalent of BuLi, resp., yielding both times Li salts of cis-
 trihydrogen cyclotriphosphazenes [(RNH)₃(RN)₃P₃N₃]³⁻ (R = Cy, Ph). The
 crystal and mol. structures of [(CyNH)₆(CyN)₃P₃N₃Li₃]₂·PhMe and
 [(PhNH)₆(PhN)₃P₃N₃Li₃(THF)₆].c ntdot.4THF are reported.
 IT 134435-36-2P 176513-95-4P
 (preparation, protonation and deprotonation)
 RN 134435-36-2 HCAPLUS
 CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexahydro-2,2,4,4,6,6-
 hexakis(phenylamino)-, hexalithium salt (9CI) (CA INDEX NAME)



●₆ Li

RN 176513-95-4 HCAPLUS
 CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexakis(cyclohexylamino)-
 2,2,4,4,6,6-hexahydro-, hexalithium salt (9CI) (CA INDEX NAME)



●₆ Li

CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 75
 IT 134435-36-2P 176513-95-4P

10/518,634

(preparation, protonation and deprotonation)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L36 ANSWER 5 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:625562 HCAPLUS Full-text

DOCUMENT NUMBER: 129:339029

ORIGINAL REFERENCE NO.: 129:68921a,68924a

TITLE: Phosphorus oxonitridosodalites: synthesis using a
molecular precursor and structural investigation
by x-ray and neutron powder diffraction and ³¹P
MAS NMR spectroscopy

AUTHOR(S): Stock, Norbert; Irran, Elisabeth; Schnick,
Wolfgang

CORPORATE SOURCE: Laboratorium Anorganische Chemie Universitat,
Bayreuth, D-95440, Germany

SOURCE: Chemistry--A European Journal (1998), 4(9),
1822-1828

CODEN: CEUJED; ISSN: 0947-6539

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 05 Oct 1998

AB The oxonitridophosphates M₈-mHm[P₁₂N₁₈O₆]Cl₂ (M = Cu, Li) with a sodalite-like
[P₁₂N₁₈O₆]6- framework of corner-sharing PN₃O tetrahedra were synthesized by
the reaction of the resp. metal chlorides with (NH₂)₂P(O)NP(NH₂)₃·NH₄Cl. In
this precursor the desired molar ratio, P:O = 2:1, of the [P₁₂N₁₈O₆]6-
framework structure was preorganized on a mol. level. Analogous
oxonitridosodalites also were obtained from the metal salts MX (M = Cu, Li; X
= Cl, Br, I) or Li₂S, the P/O and P/N components OP(NH₂)₃ or HPN₂, and NH₄X or
MX as halogen sources. The crystal structures of the phosphorus
oxonitridosodalites Cu₄.8H₃.2[P₁₂N₁₈O₆]Cl₂ (1), Li₅.5H₂.5[P₁₂N₁₈O₆]Cl₂ (2),
Li₆.2H₁.8[P₁₂N₁₈O₆]Br₂ (3), and Li₅.8H₂.2[P₁₂N₁₈O₆]I₂ (4) were studied by
using neutron and x-ray powder diffraction as well as ³¹P MAS NMR
spectroscopy. Rietveld refinements were performed in the cubic space group
I_hivin.43m (Z = 1, a = 820.25(1) to 830.81(2) pm for X = Cl to I). No exptl.
evidence for a crystallog. ordering of the N/O atoms and for other than PN₃O
tetrahedra in the sodalite frameworks was obtained.

IT 182505-10-8P

(for preparation of copper and lithium phosphorus
oxonitridosodalites using a mol. precursor)

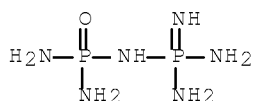
RN 182505-10-8 HCAPLUS

CN Iminoimidodiphosphoramidate, compd. with ammonium chloride ((NH₄)Cl)
(1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 85586-91-0

CMF H10 N6 O P2



CM 2

CRN 12125-02-9

CMF C1 H4 N

C1—NH₄

CC 78-6 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 75

ST crystal structure copper lithium phosphorus
 oxonitridosodalite; phosphorus copper lithium
 oxonitridosodalite prepn structure; oxonitridophosphate copper
 lithium sodalite prepn structure

IT Crystal structure
 Molecular structure
 (of copper and lithium phosphorus oxonitridosodalites)

IT 13597-72-3, Phosphoric triamide
 (for preparation of copper and lithium phosphorus
 oxonitridosodalites)

IT 7664-41-7, Ammonia, reactions 7783-20-2, Ammonium sulfate
 ((NH₄)₂SO₄), reactions 10026-13-8, Phosphorus chloride (PCl₅)
 (for preparation of copper and lithium phosphorus
 oxonitridosodalites using a mol. precursor)

IT 13966-08-0P 182505-10-8P
 (for preparation of copper and lithium phosphorus
 oxonitridosodalites using a mol. precursor)

IT 10377-51-2, Lithium iodide (LiI) 12124-97-9, Ammonium
 bromide 12136-58-2, Lithium sulfide (Li₂S) 13455-05-5,
 Phosphorothioic triamide
 (for preparation of lithium phosphorus oxonitridosodalite)

IT 7447-41-8, Lithium chloride, reactions
 (for preparation of lithium phosphorus oxonitridosodalite
 using a mol. precursor)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L36 ANSWER 6 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1996:211366 HCAPLUS Full-text

DOCUMENT NUMBER: 124:330719

ORIGINAL REFERENCE NO.: 124:61031a,61034a

TITLE: Hexalithiated hexakis(cyclohexylamino)cyclotriphos-
 phazene; a (Li⁺)₁₂ cage containing puckered
 [NP(NCy)₂]₃₆⁻ ions

AUTHOR(S): Steiner, Alexander; Wright, Dominic S.

CORPORATE SOURCE: Univ. Chem. Lab., Cambridge, CB2 1EW, UK

SOURCE: Angewandte Chemie, International Edition in
 English (1996), 35(6), 636-7
 CODEN: ACIEAY; ISSN: 0570-0833

PUBLISHER: VCH

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 12 Apr 1996

AB The deprotonation of hexakis(cyclohexylamino)cyclotriphosphazene (H₆L) with
 BuLi in the presence of tetramethylethylenediamine (TMEDA) gave [Li₆L(TMEDA)₃]

(I) which on crystallization from THF/hexane gave $[\text{Li}_6\text{L}(\text{THF})_2]2.5\text{THF}$ (II). I was characterized by IR spectra. II is monoclinic, space group $C2/c$, $Z = 4$, $R = 0.067$, $R_w = 0.178$. II has a centrosym. dimeric cage structure in which 12 Li cations are complexed by 2 chair-shaped L_6^- ions and by 4 THF's. The central core of the mol. of II is that of an approx. D_{3d} sym. polyhedron, formed by the interaction of the ring N and equatorially substituted NCy groups of the 2 L_6^- with 6 Li centers. Each metal center is coordinated by a bidentate N(ring)-P-N(eq) chelate system from 1 anion and by a further N(eq) interaction from another anion. The remaining Li cations are accommodated at the other P3N3 faces of each of the hexaanions.

IT 176513-96-5P

(preparation of)

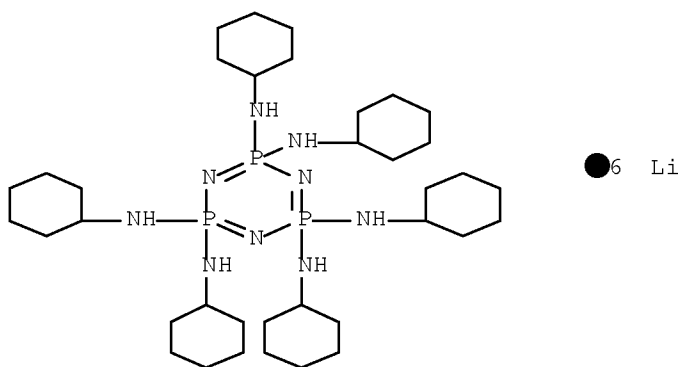
RN 176513-96-5 HCAPLUS

CN 1,2-Ethanediamine, N,N,N',N'-tetramethyl-, compd. with
2,2,4,4,6,6-hexakis(cyclohexylamino)-2,2,4,4,6,6-hexahydro-1,3,5,2,4,6-
triazatriphosphorine hexalithium salt (3:1) (9CI) (CA INDEX NAME)

CM 1

CRN 176513-95-4

CMF C36 H72 N9 P3 . 6 Li



CM 2

CRN 110-18-9

CMF C6 H16 N2

$\text{Me}_2\text{N}-\text{CH}_2-\text{CH}_2-\text{NMe}_2$

CC 78-7 (Inorganic Chemicals and Reactions)

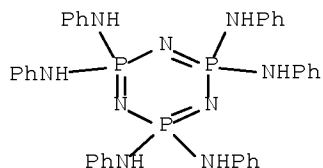
Section cross-reference(s): 75

IT 176513-96-5P

(preparation of)

L36 ANSWER 7 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1991:429615 HCAPLUS Full-text
DOCUMENT NUMBER: 115:29615

ORIGINAL REFERENCE NO.: 115:5221a,5224a
 TITLE: Pseudochalcogen compounds. XXVI. Reactions of organocyanamides, RNHCN (R = isopropyl) and silver phenylcyanamide, with hexachlorocyclotriphosphazene
 AUTHOR(S): Jaeger, L.; Ahmed, S.; Koehler, H.
 CORPORATE SOURCE: Sek. Chem., Martin-Luther-Univ., Halle/Saale, O-4010, Germany
 SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie (1990), 591, 118-24
 CODEN: ZAACAB; ISSN: 0044-2313
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 OTHER SOURCE(S): CASREACT 115:29615
 ED Entered STN: 27 Jul 1991
 AB Reactions of organocyanamides, RNHCN (R = CHMe₂) and Ag[RNCN] (R = Ph), with P₃N₃Cl₆ yield compds. of the type P₃N₃Cl₆-n[N(CN)R]n. For these organocyanamides, a nongeminal (R = CHMe₂, n = 3) and geminal (R = Ph, n = 2, 6) mode of chlorine replacement was observed. The bonding of the cyanamide substituents, P-N(CN)R, is confirmed by IR data as well as by a modified synthetic route.
 IT 134435-36-2
 (reaction of, with bromocyanogen)
 RN 134435-36-2 HCAPLUS
 CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexahydro-2,2,4,4,6,6-hexakis(phenylamino)-, hexalithium salt (9CI) (CA INDEX NAME)

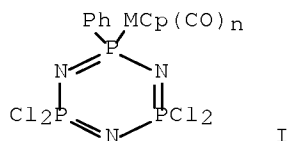


●⁶ Li

CC 29-14 (Organometallic and Organometalloidal Compounds)
 IT 14026-38-1 134435-36-2
 (reaction of, with bromocyanogen)

L36 ANSWER 8 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 1986:608979 HCAPLUS Full-text
 DOCUMENT NUMBER: 105:208979
 ORIGINAL REFERENCE NO.: 105:33703a,33706a
 TITLE: Synthesis and structure of transition-metal-bound phosphazenes derived from phosphazene anions
 AUTHOR(S): Allcock, Harry R.; Mang, Michael N.; Riding, Geoffrey H.; Whittle, Robert R.
 CORPORATE SOURCE: Dep. Chem., Pennsylvania State Univ., University Park, PA, 16802, USA
 SOURCE: Organometallics (1986), 5(11), 2244-50
 CODEN: ORGND7; ISSN: 0276-7333
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 105:208979

ED Entered STN: 13 Dec 1986
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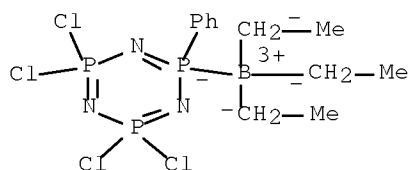
AB 1-Phenyl-1-(carbonylcyclopentadienylmetallo)-3,3,5,5-tetrachlorocyclotriphosphazenes I (M = Cr, Mo, W, Ru, Fe; n = 2, 3) were prepared by the interaction of Li (1-phenyl-3,3,5,5-tetrachlorocyclotriphosphazene-1-yl)triethylborate (II) with MCp(CO)nI (Cp = η^5 -C₅H₅) in THF in yields ranging from 15% to 100%. II is in equilibrium with Li 1-phenyl-3,3,5,5-tetrachlorocyclotriphosphazene (III), a reactive species with a P(III) center. The P(III) center in III reacts with CrCp(CO)₃I, MoCp(CO)₃I, WCp(CO)₃I, and RuCp(CO)₂I by a carbonyl substitution pathway to give a thermally unstable anionic metallophosphazene in competition with the formation of I. The structural features of I were examined by x-ray crystal structures.

IT 86727-36-8F

(preparation and reaction with transition metal iodides)

RN 86727-36-8 HCAPLUS

CN Borate(1-), triethyl(2,2,4,4-tetrachloro-2,2,4,4,6,6-hexahydro-6-phenyl-1,3,5,2,4,6-triazatriphosphorinato- κ P6)-, lithium, (T-4)-(9CI) (CA INDEX NAME)



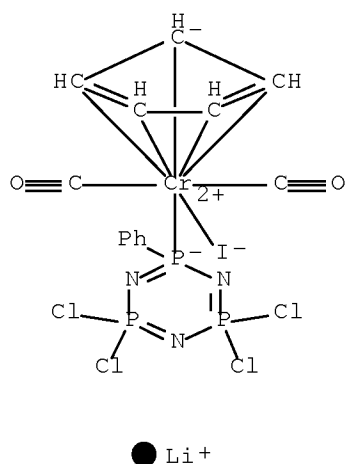
● Li⁺

IT 104323-06-0P

(preparation of)

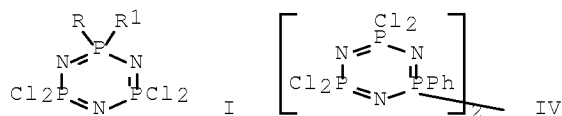
RN 104323-06-0 HCAPLUS

CN Chromate(1-), dicarbonyl(η^5 -2,4-cyclopentadien-1-yl)iodo(2,2,4,4-tetrachloro-2,2,4,4,6,6-hexahydro-6-phenyl-1,3,5,2,4,6-triazatriphosphorinato-P6)-, lithium (9CI) (CA INDEX NAME)



CC 29-1 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 75
 IT 86727-36-8P
 (preparation and reaction with transition metal iodides)
 IT 104323-06-0P
 (preparation of)

L36 ANSWER 9 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 1984:6827 HCAPLUS Full-text
 DOCUMENT NUMBER: 100:6827
 ORIGINAL REFERENCE NO.: 100:1179a,1182a
 TITLE: Iron-bound cyclotriphosphazenes derived from phosphazene anions. X-ray crystal structure of N3P3Cl4(Me) [Fe(CO)2(C5H5)]
 AUTHOR(S): Nissan, Robin A.; Connolly, Mark S.; Mirabelli, Mario G. L.; Whittle, Robert R.; Allcock, Harry R.
 CORPORATE SOURCE: Dep. Chem., Pennsylvania State Univ., University Park, PA, 16802, USA
 SOURCE: Journal of the Chemical Society, Chemical Communications (1983), (15), 822-4
 CODEN: JCCCAT; ISSN: 0022-4936
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 ED Entered STN: 12 May 1984
 GI



AB Lithiation of phosphazene I (R = Me, R1 = H) with MeLi in THF at -78° followed by coupling reaction with [FeI(CO)2(η5-Cp)] (II; Cp = cyclopentadienyl) in THF gave I [R = Me, R1 = Fe(CO)2Cp] (III). The analogous compound I [R = Ph, R1 =

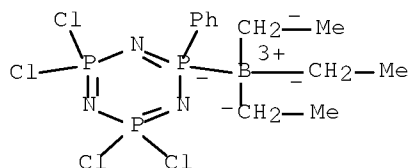
Fe(CO)₂Cp] was prepared by cleavage of dimer IV with LiBEt₃H followed by coupling with II. The structure of III was determined by x-ray crystallog.

IT 86727-36-8P

(preparation and coupling reaction of, with
dicarbonylcyclopentadienyliodoiron)

RN 86727-36-8 HCAPLUS

CN Borate(1-), triethyl(2,2,4,4-tetrachloro-2,2,4,4,6,6-hexahydro-6-phenyl-1,3,5,2,4,6-triazatriphosphorinato-κP6)-, lithium, (T-4)-(9CI) (CA INDEX NAME)



CC 29-14 (Organometallic and Organometalloidal Compounds)

Section cross-reference(s): 75

IT 77217-61-9P 86727-36-8P

(preparation and coupling reaction of, with
dicarbonylcyclopentadienyliodoiron)

L36 ANSWER 10 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1983:558889 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 99:158889

ORIGINAL REFERENCE NO.: 99:24381a,24382a

TITLE: Synthesis of 1-halo- and 1-alkyl-1-phenyltetrachlorocyclotriphosphazene polymerization "monomers" from bi(cyclophosphazenes)

AUTHOR(S): Allcock, Harry R.; Connolly, Mark S.; Whittle, Robert R.

CORPORATE SOURCE: Dep. Chem., Pennsylvania State Univ., University Park, PA, 16802, USA

SOURCE: Organometallics (1983), 2(11), 1514-23
CODEN: ORGND7; ISSN: 0276-7333

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 99:158889

ED Entered STN: 12 May 1984

AB A new synthetic route was developed for the preparation of 1-halo- and 1-alkyl-1-phenyltetrachlorocyclotriphosphazenes of general formula N₃P₃Cl₄RPh where R = Cl, Br, I, Me, Et, Pr, Bu, iso Pr, or CH₂CH:CH₂. These compds. are prospective polymerization monomers, most of which cannot be prepared by other routes. The synthetic procedure involves the interaction of 1,1'-diphenyl-3,3,3',3',5,5,5',5'-octachlorobi(cyclotriphosphazene) [21229-71-0] with LiBEt₃H [22560-16-3] to give a triethylborane-substituted anion [86727-36-8]. The anion reacts with proton-releasing agents to give 1-hydrido-1-phenyltetrachlorocyclotriphosphazene (I) [81098-53-5] or with alkyl halides to give 1-alkyl monomers. I reacts with halogen in CCl₄ to give 1-halo monomers. Alternatively, the 1-halo monomers can be prepared via the reaction of the

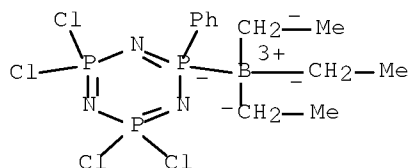
anion with CCl_4 or CHBr_3 . The structural characterization of these compds. by spectroscopic and mass spectrometric techniques is discussed, together with the reaction mechanism.

IT 86727-36-8P

(formation and reaction of, with proton-releasing agents)

RN 86727-36-8 HCAPLUS

CN Borate(1-), triethyl(2,2,4,4-tetrachloro-2,2,4,4,6,6-hexahydro-6-phenyl-1,3,5,2,4,6-triazatriphosphorinato-κP6)-, lithium, (T-4)-(9CI) (CA INDEX NAME)



CC 35-2 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 29

IT 86727-36-8P

(formation and reaction of, with proton-releasing agents)

L36 ANSWER 11 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1982:582652 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 97:182652

ORIGINAL REFERENCE NO.: 97:30565a,30568a

TITLE: Phosphazenes with olefinic side groups: proton abstraction reactions of fluoroalkoxy derivatives
AUTHOR(S): Allcock, Harry R.; Suszko, Paul R.; Evans, Thomas L.

CORPORATE SOURCE: Dep. Chem., Pennsylvania State Univ., University Park, PA, 16802, USA

SOURCE: Organometallics (1982), 1(11), 1443-9
CODEN: ORGND7; ISSN: 0276-7333

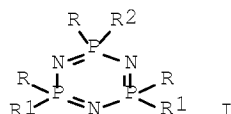
DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 97:182652

ED Entered STN: 12 May 1984

GI



AB Cyclic phosphazenes I ($\text{R} = \text{R}_1 = \text{PhO}$, $\text{R}_2 = \text{CF}_3\text{CH}_2\text{O}$; $\text{R} = \text{PhO}$, $\text{CF}_3\text{CH}_2\text{O}$, $\text{R}_1 = \text{R}_2 = \text{CF}_3\text{CH}_2\text{O}$) undergo dehydrofluorination and deprotonation on treatment with BuLi

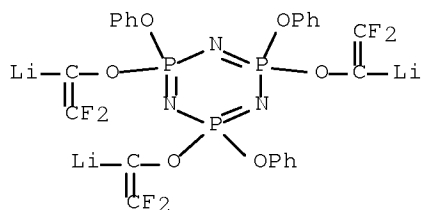
at -78° to give I ($R = R_1 = \text{PhO}$, $R_2 = \text{CF}_2\text{CLiO}$; $R = \text{PhO}$, CF_2CLiO , $R_1 = R_2 = \text{CF}_2\text{CLiO}$). These species are stable in solution at -78° but react with electrophiles such as Me_2CHOH , Me_2CHOD , MeI or Ph_3SnCl to yield the cyclophosphazenes with $-\text{OCH}:\text{CF}_2$, $-\text{OCD}:\text{CF}_2$, $-\text{OCMe}:\text{CF}_2$ or $-\text{OC}(\text{SnPh}_3):\text{CF}_2$ side groups, resp. Comparisons are made with the reactions between BuLi and trifluoroethoxy-substituted cyclic tetrameric and higher-polymeric phosphazenes.

IT 82918-25-0P 82932-64-7P

(preparation and reaction of, with electrophiles)

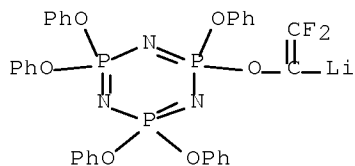
RN 82918-25-0 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2,4,6-tris[(2,2-difluoro-1-lithioethenyl)oxy]-2,2,4,4,6,6-hexahydro-2,4,6-triphenoxy-, stereoisomer (9CI) (CA INDEX NAME)



RN 82932-64-7 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2-[(2,2-difluoro-1-lithioethenyl)oxy]-2,2,4,4,6,6-hexahydro-2,4,4,6,6-pentaphenoxy- (9CI) (CA INDEX NAME)



CC 29-14 (Organometallic and Organometalloidal Compounds)

IT 82918-25-0P 82918-30-7P 82932-64-7P

(preparation and reaction of, with electrophiles)

L36 ANSWER 12 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1981:614369 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 95:214369

ORIGINAL REFERENCE NO.: 95:35657a,35660a

TITLE: The formation and reactions of carbanionic derivatives of methyl phosphazenes

AUTHOR(S): Gallicano, Keith D.; Oakley, Richard T.; Paddock, Norman L.; Sharma, Rajendra D.

CORPORATE SOURCE: Dep. Chem., Univ. British Columbia, Vancouver, BC, V6T 1Y5, Can.

SOURCE: Canadian Journal of Chemistry (1981), 59(17), 2654-64

CODEN: CJCHAG; ISSN: 0008-4042

DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 95:214369
 ED Entered STN: 12 May 1984

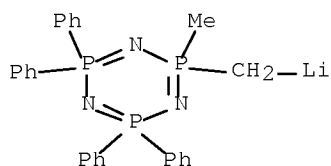
AB The cyclic phosphazenes N3P3Ph4Me2, N3P3Me6, and N4P4Me8 were deprotonated by LiR (R = alkyl). The resulting carbanions reacted with monofunctional electrophiles to form phosphazenes carrying the groups PCH2R' (R' = Me, Br, I, PhC(O), CO2H, AsMe2, Me3M (M = Si, Ge, Sn)). Two phosphazeryl groups can be joined either by the use of a difunctional halide or by oxidative coupling of organo-Cu derivs. The formation of the carbanions, the extent of deprotonation, substituent orientation, and the dependence of reactivity on ring size, are interpreted in terms of a balance between π -electron energies and electrostatic interactions.

IT 79807-05-9

(reaction of, with monofunctional electrophiles)

RN 79807-05-9 HCAPLUS

CN Lithium, [(2,2,4,4,6,6-hexahydro-2-methyl-4,4,6,6-tetraphenyl-1,3,5,2,4,6-triazatriphosphorin-2-yl)methyl]- (9CI) (CA INDEX NAME)



CC 78-8 (Inorganic Chemicals and Reactions)

IT 79807-05-9 79807-06-0

(reaction of, with monofunctional electrophiles)

L36 ANSWER 13 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1980:198467 HCAPLUS Full-text

DOCUMENT NUMBER: 92:198467

ORIGINAL REFERENCE NO.: 92:32159a,32162a

TITLE: Phosphazenes. LXVI. Phosphorus-31 NMR studies. XI. Preparation of cyclotri(phosphazene) derivatives via the corresponding lithium compound and unfolding of a phosphorus-31 NMR spectrum by a shift reagent

AUTHOR(S): Hoegel, J.; Schmidpeter, A.

CORPORATE SOURCE: Inst. Anorg. Chem., Univ. Munich, Munich, D-8000/2, Fed. Rep. Ger.

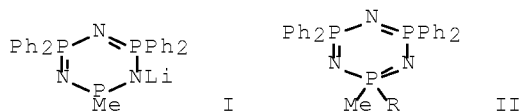
SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie (1979), 458, 168-76
 CODEN: ZAACAB; ISSN: 0044-2313

DOCUMENT TYPE: Journal

LANGUAGE: German

ED Entered STN: 12 May 1984

GI

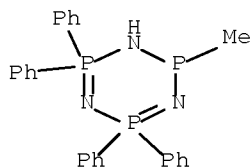


AB The reaction of lithiated cyclotriphosphazene I with RCl gave 33-90% II [R = Me₃Si, Me₃Sn, Me₂P:NSO₂C₆H₄Me-p, Me₂PS(III), Ph₂PS]. In III the 2 ³¹P nuclei of the biphosphine group are nearly isochronous and their NMR signals as well as those of the Me proton are therefore degenerate. Using a shift reagent, the shift difference can be increased by more than a factor of 10 and the degeneracy removed.

IT 73577-46-5
(reactions of, with phosphinyl chlorides)

RN 73577-46-5 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 1,2,2,4,4,6-hexahydro-6-methyl-
2,2,4,4-tetraphenyl-, lithium salt (9CI) (CA INDEX NAME)



● Li

CC 29-7 (Organometallic and Organometalloidal Compounds)

IT 73577-46-5
(reactions of, with phosphinyl chlorides)

L36 ANSWER 14 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1980:173779 HCAPLUS Full-text

DOCUMENT NUMBER: 92:173779

ORIGINAL REFERENCE NO.: 92:28011a,28014a

TITLE: Small-molecule cyclic models for the synthesis of
new polyphosphazenes: side-group construction via
lithiophenoxy derivatives

AUTHOR(S): Allcock, H. R.; Evans, T. L.; Fuller, T. J.

CORPORATE SOURCE: Dep. Chem., Pennsylvania State Univ., University
Park, PA, 16802, USA

SOURCE: Inorganic Chemistry (1980), 19(4), 1026-30
CODEN: INOCAJ; ISSN: 0020-1669

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 12 May 1984

AB Hexakis(p-lithiophenoxy)cyclotriphosphazene, [NP(OC₆H₄-Li-p)₂]₃ (I), was prepared as an intermediate for the covalent attachment of metallo, phosphino, carboxylato, alkyl, or tertiary alc. units to the side-group structure. These reactions are models for the preparation of the corresponding phosphazene high polymers. Intermediate I was prepared by the metal-halogen exchange reaction between [NP(OC₆H₄Br-p)₂]₃ (II) or [NP(OC₆H₄I-p)₂]₃ and BuLi in THF at -40 to -

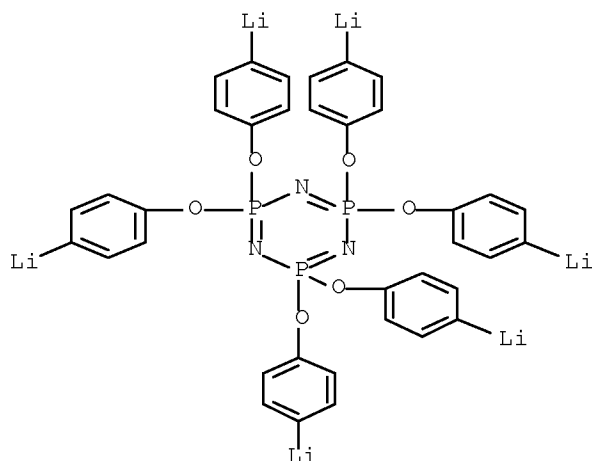
60°. The subsequent interaction of I with D₂O, Ph₂PCl, CO₂, BuBr, benzophenone, Ph₃SnCl, or (Ph₃P)AuCl yielded the para-substituted derivs. [NP(OC₆H₄D)2]3 (III), [NP(OC₆H₄PPh₂)2]3 (IV), [NP(OC₆H₄CO₂H)2]3 (V), [NP(OC₆H₄Bu)2]3 (VI), [NP(OC₆H₄C(OH)Ph₂)2]3 (VII), [NP(OC₆H₄SnPh₃)2]3 (VIII), and [NP(OC₆H₄AuPPh₃)2]3 (IX), resp. Compds. III-IX cannot be obtained readily by their synthetic routes. For example, the reaction of II with NaPPh₂ is a less efficient route to the preparation of IV. Compound IV is a model coordination carrier species for transition-metal catalysts. The possible extension of these reactions to linear phosphazene high polymers is discussed.

IT 69322-59-4P

(preparation and substitution reactions of, with chlorodiphenylphosphine, chlorotriphenylstannane, and carbon dioxide)

RN 69322-59-4 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexahydro-2,2,4,4,6,6-hexakis(4-lithiophenoxy)- (9CI) (CA INDEX NAME)

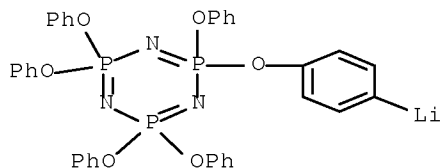


IT 72796-21-5P

(preparation of)

RN 72796-21-5 HCAPLUS

CN Lithium, [4-[(4,4,6,6-tetrahydro-2,4,4,6,6-pentaphenoxy-1,3,5,2,4,6-triazatriphosphorin-2(2H)-yl)oxy]phenyl]- (9CI) (CA INDEX NAME)



CC 78-8 (Inorganic Chemicals and Reactions)

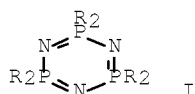
Section cross-reference(s): 67

IT 69322-59-4P

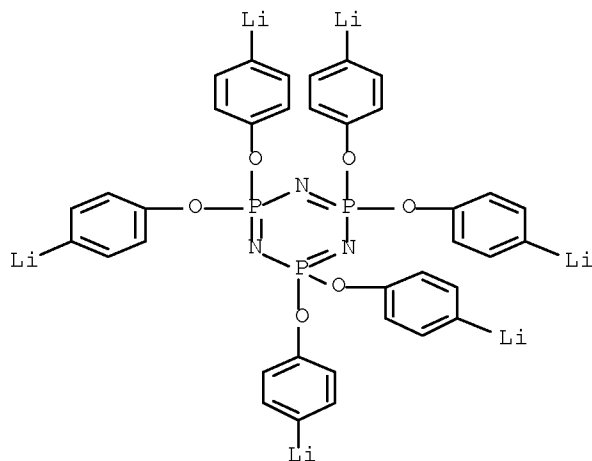
(preparation and substitution reactions of, with chlorodiphenylphosphine, chlorotriphenylstannane, and carbon

dioxide)
 IT 5032-39-3P 72796-21-5P 72796-22-6P 72811-83-7P
 72827-45-3P
 (preparation of)

L36 ANSWER 15 OF 15 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 1979:121689 HCAPLUS Full-text
 DOCUMENT NUMBER: 90:121689
 ORIGINAL REFERENCE NO.: 90:19279a
 TITLE: Preparation of [NP(p-OC6H4Li)2]3 by metal-halogen
 exchange, and its reactions with electrophiles
 AUTHOR(S): Evans, T. L.; Fuller, T. J.; Allcock, H. R.
 CORPORATE SOURCE: Dep. Chem., Pennsylvania State Univ., University
 Park, PA, USA
 SOURCE: Journal of the American Chemical Society (1979),
 101(1), 242
 CODEN: JACSAT; ISSN: 0002-7863
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 ED Entered STN: 12 May 1984
 GI



AB Treating I (R = OC6H4Br-p) with BuLi in THF at -40° gave I (R = OC6H4Li-p)
 which react with electrophiles to give I (R = OC6H4R1-p; R1 = D, CO2H, PPh2,
 SnPh3).
 IT 69322-59-4P
 (preparation and reaction with electrophiles)
 RN 69322-59-4 HCAPLUS
 CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexahydro-2,2,4,4,6,6-
 hexakis(4-lithiophenoxy)- (9CI) (CA INDEX NAME)



CC 29-2 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 28
IT ~~69322-59-4P~~
(preparation and reaction with electrophiles)

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L8	919149	SEA FILE=REGISTRY	ABB=ON	PLU=ON	(P(L)N)/ELS
L10	895682	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L8 NOT PMS/CI
L11	2814	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L10 AND 46.716/RID AND 46.150/RID
L12	15	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L11 AND LI/ELS
L17	105	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L10 AND IMINOIMIDODIPHOSP HORAMID?
L18	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L17 AND LI/ELS
L19	296678	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L8 AND X/ELS
L20	13143	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L19 AND PHOSPHORAMID?
L21	5238	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L20 AND (SI OR GE OR SN OR AS OR SB OR BI OR S OR SE OR TE OR PO)/ELS
L22	64	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L8 AND F/ELS AND 3/ELC.SUB
L23	777044	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L8 AND O/ELS
L24	193937	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L23 AND (SI OR GE OR SN OR AS OR SB OR BI OR S OR SE OR TE OR PO)/ELS
L26	584	SEA FILE=REGISTRY	ABB=ON	PLU=ON	L24 AND PHOSPHINIC AMIDE?
L27	13	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L12
L28	1	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L18
L29	13	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L27 OR L28
L30	45	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L17
L31	3	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L30 AND LITHIUM
L32	15	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L29 OR L31
L33	1	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L30 AND ELECTROLYT?
L34		QUE	ABB=ON	PLU=ON	BATTERY? OR BATTERIES OR ELECTRODE# OR CATHODE# OR ANODE#
L35	1	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L30 AND L34
L36	15	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L32 OR L33 OR L35
L37	2188	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L21
L38	25626	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L20
L39	322	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L26
L40	337	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L22
L41	26191	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	(L37 OR L38 OR L39 OR L40)
L42	155	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L41 AND L34
L43	48	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L42 AND ELECTROLYT?
L44	34	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L43 AND LITHIUM
L45	34	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L44 NOT L36

=> d 145 1-34 ibib ed abs hitstr hitind

L45 ANSWER 1 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2008:635752 HCAPLUS Full-text
 DOCUMENT NUMBER: 148:589356
 TITLE: Nonaqueous electrolyte solution
 containing ionic liquid and ester compound for
 battery and nonaqueous electrolyte
 battery
 INVENTOR(S): Otsuki, Masatomo; Kanno, Hiroshi
 PATENT ASSIGNEE(S): Bridgestone Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 21pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2008123898	A	20080529	JP 2006-307945	20061114
PRIORITY APPLN. INFO.:			JP 2006-307945	20061114

OTHER SOURCE(S): MARPAT 148:589356

ED Entered STN: 29 May 2008

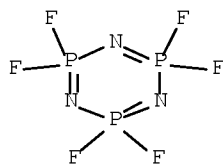
AB The electrolyte solution contains an ionic liquid having P:N bond and a carboxylate compound R1CO2R2 (I; R1 = C1-2 alkyl; R2 = C2-4 alkenyl, propargyl, alkyl; R1 and R2 may be bonded to form a ring) and/or a carbonate compound R3OCO2R4 (II; R3 = C1-2 alkyl, Ph; R4 = alkenyl; R3 and R4 may be bonded to form a ring). The battery, especially a secondary Li battery, equipped with the electrolyte solution provides high safety.

IT 15599-91-4

(reaction of, with triethylamine; in preparation of ionic liquid for nonaq. electrolyte solution)

RN 15599-91-4 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq electrolyte soln ionic liq carbonate ester
battery safety; carboxylate ester nonaq electrolyte
soln ionic liq battery

IT Carboxylic acids, uses

(esters; nonaq. electrolyte solution containing ionic liquid and ester compound for battery)

IT Secondary batteries

(lithium; nonaq. electrolyte solution containing ionic liquid and ester compound for battery)

IT Battery electrolytes

Ionic liquids

Safety

(nonaq. electrolyte solution containing ionic liquid and ester compound for battery)

IT Carbonates, uses

(nonaq. electrolyte solution containing ionic liquid and ester compound for battery)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
616-38-6, Dimethyl carbonate

(electrolyte solvent; nonaq. electrolyte solution containing ionic liquid and ester compound for battery)

IT 21324-40-3, Lithium hexafluorophosphate

(electrolyte; nonaq. electrolyte solution containing ionic liquid and ester compound for battery)

IT 79-20-9, Methyl acetate 591-87-7 25066-36-8
 (nonaq. electrolyte solution containing ionic liquid and ester compound for battery)

IT 936347-48-7P 936347-51-2P
 (preparation and reaction of; in preparation of ionic liquid for nonaq. electrolyte solution)

IT 1000026-75-4P 1027783-72-7P
 (preparation of; nonaq. electrolyte solution containing ionic liquid and ester compound for battery)

IT 62-53-3, Aniline, reactions 121-44-8, Triethylamine, reactions 26042-63-7, Silver hexafluorophosphate
 (reaction of, with cyclophosphazene; in preparation of ionic liquid for nonaq. electrolyte solution)

IT 15599-91-4
 (reaction of, with triethylamine; in preparation of ionic liquid for nonaq. electrolyte solution)

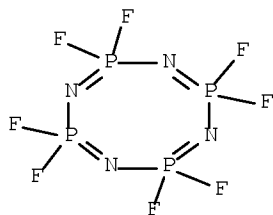
L45 ANSWER 2 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2008:252286 HCAPLUS Full-text
 DOCUMENT NUMBER: 148:288561
 TITLE: Nonaqueous electrolyte solution and nonaqueous battery
 INVENTOR(S): Horikawa, Yasuo
 PATENT ASSIGNEE(S): Bridgestone Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 14pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2008047480	A	20080228	JP 2006-223889	20060821
PRIORITY APPLN. INFO.:			JP 2006-223889	20060821

OTHER SOURCE(S): MARPAT 148:288561
 ED Entered STN: 29 Feb 2008
 AB The electrolyte solution contains a cyclophosphazene compound (NPR12)n (R1 = halo, alkoxy, aryloxy; n = 3-4), a nonaq. solvent containing a difluorophosphate ester compound R2OPF2O (R2 = alkyl, cycloalkyl, alkenyl, alkoxy-substituted alkyl, or aryl), an alkyne compound R3C.tplbond.CR4 (R3 and R4 = H, C1-6 alkyl, C2-3 alkenyl or aryl), and an electrolyte salt. The electrolyte solution shows high nonflammability and the battery provides high safety under high-temperature environment.

IT 14700-00-6, Octafluorocyclotetraphosphazene
 (electrolyte solvent; nonflammable nonaq. electrolyte solution for nonaq. battery)

RN 14700-00-6 HCAPLUS
 CN 2λ5,4λ5,6λ5,8λ5-1,3,5,7,2,4,6,8-
 Tetrizatetraphosphocine, 2,2,4,4,6,6,8,8-octafluoro- (CA INDEX NAME)



- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST cyclophosphazene fluorophosphate alkyne compd nonaq
electrolyte soln battery safety
- IT Secondary batteries
(lithium; nonflammable nonaq. electrolyte solution
for nonaq. battery)
- IT Battery electrolytes
Fire-resistant materials
Safety
(nonflammable nonaq. electrolyte solution for nonaq.
battery)
- IT Cyclophosphazenes
(nonflammable nonaq. electrolyte solution for nonaq.
battery)
- IT 96-48-0, γ -Butyrolactone 105-58-8, Diethyl carbonate
(electrolyte solvent; nonaq. electrolyte solution
and nonaq. battery)
- IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
460-52-6, Ethyl difluorophosphate 616-38-6, Dimethyl carbonate
623-53-0, Ethyl methyl carbonate 1126-52-9 14700-00-6,
Octafluorocyclotetraphosphazene 26078-17-1, Butyl difluorophosphate
55593-39-0 93554-76-8 485399-26-6 607744-75-2 847485-19-2
1003019-83-7 1006384-41-3 1007894-86-1
(electrolyte solvent; nonflammable nonaq.
electrolyte solution for nonaq. battery)
- IT 21324-40-3, Lithium hexafluorophosphate 132843-44-8,
Lithium bis(pentafluoroethylsulfonyl)imide
(electrolyte; nonflammable nonaq. electrolyte
solution for nonaq. battery)
- IT 536-74-3, Phenylacetylene 23056-94-2, 2-Methyl-1-hexen-3-yne
(nonaq. electrolyte solution and nonaq. battery)
- IT 673-32-5, 1-Phenyl-1-propyne 917-92-0, 3,3-Dimethyl-1-butyne
7154-75-8, 4-Methyl-1-pentyne
(nonflammable nonaq. electrolyte solution for nonaq.
battery)

L45 ANSWER 3 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2008:222511 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 148:266037

TITLE: Nonflammable nonaqueous electrolyte
solutions for batteries

INVENTOR(S): Horikawa, Yasuo

PATENT ASSIGNEE(S): Bridgestone Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE -----
JP 2008041296	A	20080221	JP 2006-210577	20060802
PRIORITY APPLN. INFO.:			JP 2006-210577	20060802

OTHER SOURCE(S): MARPAT 148:266037

ED Entered STN: 22 Feb 2008

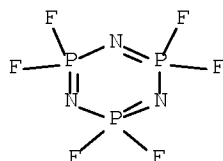
AB The electrolyte solns. contain cyclic phosphazenes (NPR₁₂)_n (R₁ = halo, alkoxy, aryloxy; n = 3-4), difluorophosphate esters R₂OP(:O)F₂ (R₂ = (cyclo)alkyl, alkenyl, alkoxy-substituted alkyl or aryl), sulfones R₃SO₂R₄ (R₃₋₄ = C₁₋₃ alkyl, alkenyl, phenyl; R₃ and R₄ may form ring), and supporting electrolytes. The solns., applicable for lithium batteries, show high fire resistance at high temperature and thereby high safety.

IT 15599-91-4

(fireproofing agents; in nonflammable nonaq. electrolyte solns. for batteries)

RN 15599-91-4 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery nonflammable nonaq electrolyte cyclic phosphazene difluorophosphate ester sulfone; lithium battery electrolyte cyclic phosphazene difluorophosphate ester sulfone fireproofing

IT Cyclophosphazenes
Sulfones

(fireproofing agents; in nonflammable nonaq. electrolyte solns. for batteries)

IT Safety
(in nonflammable nonaq. electrolyte solns. for batteries)

IT Primary batteries
Secondary batteries
(lithium; nonflammable nonaq. electrolyte solns. for batteries)

IT Battery electrolytes
(nonflammable nonaq. electrolyte solns. for batteries)

IT 77-77-0, Divinyl sulfone 126-33-0, Sulfolane 3680-02-2, Methyl vinyl sulfone 15599-91-4 16212-05-8, Allyl phenyl sulfone 21846-70-8 33027-68-8 55593-39-0 485399-27-7 593094-52-1
(fireproofing agents; in nonflammable nonaq. electrolyte solns. for batteries)

IT 460-52-6, Ethyl difluorophosphate 1126-52-9 22382-13-4, Methyl difluorophosphate 426264-80-4 1003019-82-6 1006384-41-3

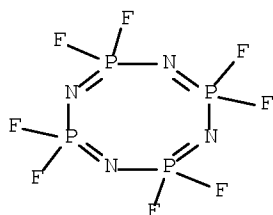
10/518,634

(in nonflammable nonaq. electrolyte solns. for
batteries)

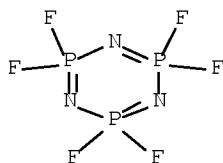
L45 ANSWER 4 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2008:222308 HCAPLUS Full-text
DOCUMENT NUMBER: 148:242917
TITLE: Nonaqueous-electrolyte solution
containing cyclofluorophosphazene,
fluorophosphate, and unsaturated ester and
nonaqueous battery
INVENTOR(S): Horikawa, Yasuo
PATENT ASSIGNEE(S): Bridgestone Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 14pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2008041308	A	20080221	JP 2006-210792	20060802
PRIORITY APPLN. INFO.:			JP 2006-210792	20060802

OTHER SOURCE(S): MARPAT 148:242917
ED Entered STN: 22 Feb 2008
AB The electrolyte solution contains cyclic phosphazenes (NPR₁₂)_n (R₁ = halo, alkoxy, or aryloxy; n = 3 or 4) and difluorophosphate esters R₂OPF₂O (R₂ = alkyl, cycloalkyl, alkenyl, alkoxy-substituted alkyl or aryl) as nonaq. solvents, and unsatd. esters R₃CO₂R₄ (R₃ = C₁₋₂ alkyl; R₄ = C₂₋₄ alkenyl or propargyl; R₃ and R₄ may be bonded to form a ring), and a supporting electrolyte. The electrolyte solution shows high fireproofing property and the battery provides high capacity after high-temperature storage and safety.
IT 14700-00-6, Octafluorocyclotetraphosphazene 15599-91-4
(electrolyte solvent; nonaq.-electrolyte solution
containing cyclofluorophosphazene, fluorophosphate, and unsatd. ester
for battery)
RN 14700-00-6 HCAPLUS
CN 2λ5, 4λ5, 6λ5, 8λ5-1, 3, 5, 7, 2, 4, 6, 8-
Tetrazatetraphosphocine, 2, 2, 4, 4, 6, 6, 8, 8-octafluoro- (CA INDEX NAME)



RN 15599-91-4 HCAPLUS
CN 1, 3, 5, 2, 4, 6-Triazatriphosphorine, 2, 2, 4, 4, 6, 6-hexafluoro-2, 2, 4, 4, 6, 6-hexahydro- (CA INDEX NAME)



- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST nonaq electrolyte soln cyclofluorophosphazene
fluorophosphate unsatd ester battery safety
- IT Cyclophosphazenes
(electrolyte solvent; nonaq.-electrolyte solution
containing cyclofluorophosphazene, fluorophosphate, and unsatd. ester
for battery)
- IT Secondary batteries
(lithium; nonaq.-electrolyte solution containing
cyclofluorophosphazene, fluorophosphate, and unsatd. ester for
battery)
- IT Battery electrolytes
Safety
(nonaq.-electrolyte solution containing cyclofluorophosphazene,
fluorophosphate, and unsatd. ester for battery)
- IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
108-32-7, Propylene carbonate 460-52-6, Ethyl difluorophosphate
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
1126-52-9 14700-00-6, Octafluorocyclotetraphosphazene
15599-91-4 22382-13-4, Methyl difluorophosphate 33027-68-8
55593-39-0 55593-41-4 724792-60-3 1003019-82-6 1006384-41-3
1006384-42-4 1006384-48-0
(electrolyte solvent; nonaq.-electrolyte solution
containing cyclofluorophosphazene, fluorophosphate, and unsatd. ester
for battery)
- IT 21324-40-3, Lithium hexafluorophosphate 244761-29-3,
Lithium bis(oxalato)borate
(electrolyte; nonaq.-electrolyte solution containing
cyclofluorophosphazene, fluorophosphate, and unsatd. ester for
battery)
- IT 105-38-4, Vinyl propionate 591-87-7, Allyl acetate 627-09-8,
Propargyl acetate 674-82-8, Diketene
(nonaq.-electrolyte solution containing cyclofluorophosphazene,
fluorophosphate, and unsatd. ester for battery)

L45 ANSWER 5 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2008:38139 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 148:144881

TITLE: Preparation of lithium salts for
lithium secondary batteries

INVENTOR(S): Yamamoto, Takashi; Matsui, Masaki

PATENT ASSIGNEE(S): Toyota Motor Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

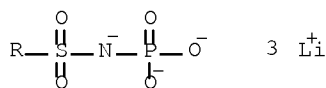
10/518,634

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008001672	A	20080110	JP 2006-175407	20060626
PRIORITY APPLN. INFO.:			JP 2006-175407	20060626

OTHER SOURCE(S): CASREACT 148:144881; MARPAT 148:144881

ED Entered STN: 10 Jan 2008

GI



I

AB Li salts I (R = fluoroalkyl, alkyl, phenyl), which show increased Li transport when used as supporting electrolytes for Li secondary batteries, are prepared by reacting RSO₂NHP(O)(OH)₂ (II; R = same as above) with basic Li compds. Thus, MeOH solution of LiOH was added dropwise to EtOH solution of II (R = CF₃) (preparation given) and the reaction mixture was stirred at room temperature overnight to give I (R = CF₃).

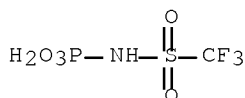
IT 1001025-42-8P

(preparation of Li salts as supporting electrolytes for Li secondary batteries by reacting

(fluoroalkylsulfonyl)phosphoramidic acids with basic Li compds)

RN 1001025-42-8 HCAPLUS

CN Phosphoramidic acid, N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:3) (CA INDEX NAME)



● 3 Li

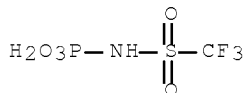
IT 271249-92-4P 366797-87-7P

(preparation of Li salts as supporting electrolytes for Li secondary batteries by reacting

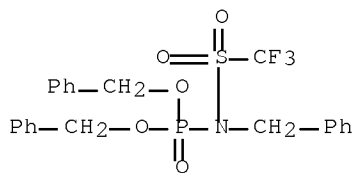
(fluoroalkylsulfonyl)phosphoramidic acids with basic Li compds.)

RN 271249-92-4 HCAPLUS

CN Phosphoramidic acid, N-[(trifluoromethyl)sulfonyl]- (CA INDEX NAME)



RN 366797-87-7 HCAPLUS
 CN Phosphoramidic acid, N-(phenylmethyl)-N-[(trifluoromethyl)sulfonyl]-, bis(phenylmethyl) ester (CA INDEX NAME)



CC 29-7 (Organometallic and Organometalloidal Compounds)
 Section cross-reference(s): 52
 ST fluoroalkylsulfonylphosphoramidic acid lithium salt prepn
 secondary battery supporting electrolyte
 IT Secondary batteries
 (lithium; preparation of Li salts as supporting
 electrolytes for Li secondary batteries by
 reacting (fluoroalkylsulfonyl)phosphoramidic acids with basic Li
 compds.)
 IT Battery electrolytes
 (preparation of Li salts as supporting electrolytes for Li
 secondary batteries by reacting
 (fluoroalkylsulfonyl)phosphoramidic acids with basic Li compds.)
 IT Electrolytes
 (supporting; preparation of Li salts as supporting electrolytes
 for Li secondary batteries by reacting
 (fluoroalkylsulfonyl)phosphoramidic acids with basic Li compds.)
 IT 1001025-42-8P
 (preparation of Li salts as supporting electrolytes for Li
 secondary batteries by reacting
 (fluoroalkylsulfonyl)phosphoramidic acids with basic Li compds)
 IT 271249-92-4P 366797-81-1P 366797-87-7P
 (preparation of Li salts as supporting electrolytes for Li
 secondary batteries by reacting
 (fluoroalkylsulfonyl)phosphoramidic acids with basic Li compds.)
 IT 1310-65-2, Lithium hydroxide 15205-57-9,
 Tribenzylphosphite 36457-58-6
 (preparation of Li salts as supporting electrolytes for Li
 secondary batteries by reacting
 (fluoroalkylsulfonyl)phosphoramidic acids with basic Li compds.)

L45 ANSWER 6 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:1334246 HCAPLUS Full-text

DOCUMENT NUMBER: 147:544588

TITLE: Nonaqueous electrolyte containing
 phosphazene compound and lithium ion
 secondary battery with high discharge
 efficiency having the same

INVENTOR(S): Nakagawa, Hiroe; Katayama, Sadahiro; Nukuta,
 Toshiyuki

PATENT ASSIGNEE(S): GS Yuasa Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 16pp.

CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007305551	A	20071122	JP 2006-135814	20060515
PRIORITY APPLN. INFO.:			JP 2006-135814	20060515

OTHER SOURCE(S): MARPAT 147:544588

ED Entered STN: 22 Nov 2007

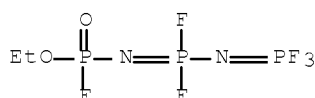
AB Disclosed is a nonaq. electrolyte made from an organic material consisting of a lithium salt, and a salt at molten state at room temperature containing a (cyclic) phosphazene compound and a quaternary ammonium organic cation.

IT 850650-07-6

(nonaq. electrolyte containing phosphazene compound for lithium ion secondary battery with high discharge efficiency)

RN 850650-07-6 HCAPLUS

CN Phosphoramidofluoridic acid, N-[difluoro[(trifluorophosphoranylidene)a mino]phosphoranylidene]-, ethyl ester (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq electrolyte cyclic phosphazene compd lithium ion secondary battery; quaternary ammonium org cation

IT Secondary batteries

(lithium; nonaq. electrolyte containing phosphazene compound for lithium ion secondary battery with high discharge efficiency)

IT Battery electrolytes

(nonaq. electrolyte containing phosphazene compound for lithium ion secondary battery with high discharge efficiency)

IT Quaternary ammonium compounds, uses

(nonaq. electrolyte containing phosphazene compound for lithium ion secondary battery with high discharge efficiency)

IT 33027-66-6 90076-65-6, LiTFSi 132843-44-8, Lithium bis(perfluoroethanesulfonyl)imide 143314-16-3, 1-Ethyl-3-methylimidazolium tetrafluoroborate 174501-64-5, 1-Butyl-3-methylimidazolium hexafluorophosphate 174501-65-6, 1-n-Butyl-3-methylimidazolium tetrafluoroborate 850650-07-6 (nonaq. electrolyte containing phosphazene compound for lithium ion secondary battery with high discharge efficiency)

L45 ANSWER 7 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2007:872939 HCAPLUS Full-text
 DOCUMENT NUMBER: 147:238824

TITLE: Electrolyte solutions using
phosphazene-type ionic liquids, semiconductor
electrodes, and dye-sensitized solar cells

INVENTOR(S): Otsuki, Masatomo; Kanno, Hiroshi

PATENT ASSIGNEE(S): Bridgestone Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 26pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2007200833	A	20070809	JP 2006-138060	20060517
PRIORITY APPLN. INFO.:			JP 2005-372268	A 20051226

OTHER SOURCE(S): MARPAT 147:238824

ED Entered STN: 10 Aug 2007

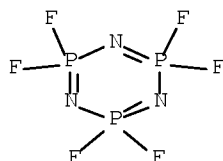
AB The title electrolyte solution contains a redox electrolyte and an ionic liquid consisting of a cation containing P and N. The title electrode is equipped with an oxide semiconductor layer formed on a conductive substrate, and an organic dye absorbed in the semiconductor layer containing the ionic liquid. The title solar cell, equipped with the electrolyte solution and the electrode, provides excellent fireproofing property.

IT 15599-91-4

(reaction of, with triethylamine; in preparation of phosphazene-type ionic liqs. for dye-sensitized solar cells)

RN 15599-91-4 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST electrolyte soln phosphazene ionic liq dye sensitized solar cell; oxide semiconductor electrode ionic liq dye sensitized solar cell; safety electrolyte soln phosphazene ionic liq solar cell fireproofing

IT Solar cells

(dye-sensitized; electrolyte solns. using phosphazene-type ionic liqs. and semiconductor electrodes for dye-sensitized solar cells)

IT Electrolytes

Fireproofing

Ionic liquids

Photoelectric cell electrodes

Safety

(electrolyte solns. using phosphazene-type ionic liqs. and semiconductor electrodes for dye-sensitized solar

- cells)
- IT Cyclophosphazenes
(electrolyte solns. using phosphazene-type ionic liqs.
and semiconductor electrodes for dye-sensitized solar
cells)
- IT 141460-19-7
(dye; electrolyte solns. using phosphazene-type ionic
liqs. and semiconductor electrodes for dye-sensitized
solar cells)
- IT 13463-67-7, Titania, uses
(electrolyte solns. using phosphazene-type ionic liqs.
and semiconductor electrodes for dye-sensitized solar
cells)
- IT 7553-56-2, Iodine, uses 7681-11-0, Potassium iodide, uses
(electrolyte; electrolyte solns. using
phosphazene-type ionic liqs. and semiconductor electrodes
for dye-sensitized solar cells)
- IT 943451-55-6P 943451-58-9P 943451-59-0P 943451-60-3P
945484-42-4P 945484-43-5P
(preparation of; electrolyte solns. using phosphazene-type
ionic liqs. and semiconductor electrodes for
dye-sensitized solar cells)
- IT 62-53-3, Aniline, reactions 110-86-1, Pyridine, reactions
121-44-8, Triethylamine, reactions 121-69-7, Dimethylaniline,
reactions 872-50-4, reactions 14104-20-2, Silver tetrafluoroborate
33454-82-9, Lithium trifluoromethanesulfonate
(reaction of, with cyclophosphazene derivative; in preparation of
phosphazene-type ionic liqs. for dye-sensitized solar cells)
- IT 15599-91-4
(reaction of, with triethylamine; in preparation of phosphazene-type
ionic liqs. for dye-sensitized solar cells)

L45 ANSWER 8 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:671044 HCAPLUS Full-text

DOCUMENT NUMBER: 147:55504

TITLE: Electrolytic solutions containing
inorganic acid amide derivatives and secondary
lithium batteries using them

INVENTOR(S): Kawashima, Atsumichi

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 26pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2007157399	A	20070621	JP 2005-348295	20051201
PRIORITY APPLN. INFO.:			JP 2005-348295	20051201

OTHER SOURCE(S): MARPAT 147:55504

ED Entered STN: 21 Jun 2007

AB The title electrolytic solns. contain halogen-containing cyclic carbonic acid
ester derivs. (high-dielec. solvent) and inorg. acid amide derivs. represented
by AOp(NR1R2)(NR3R4)q(NR5R6)rXs (A = C, P, S; R1-6 = hydrocarbyl; X = halo; p
= 1, 2; q, r = 0, 1; s = 0, 1, 2). The electrolytic solns. have high chemical
stability and the batteries show high charge/discharge efficiency.

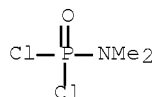
IT 677-43-0

10/518,634

(electrolytic solns. containing halogen-containing cyclic
carbonic acid ester derivs. and inorg. acid amide derivs. for Li
batteries)

RN 677-43-0 HCAPLUS

CN Phosphoramidic dichloride, N,N-dimethyl- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST electrolytic soln inorg acid amide lithium
battery; inorg acid amide cyclic carbonic acid ester
electrolytic soln

IT Electrolytic solutions

Secondary batteries

Solvents

(electrolytic solns. containing halogen-containing cyclic
carbonic acid ester derivs. and inorg. acid amide derivs. for Li
batteries)

IT 88-10-8 677-43-0 680-31-9, Hexamethylphosphoric acid
triamide 1187-03-7, Tetraethylurea 1605-65-8,
Bis(dimethylamino)phosphoryl chloride 2832-49-7, Tetraethylsulfamide
13360-57-1

(electrolytic solns. containing halogen-containing cyclic
carbonic acid ester derivs. and inorg. acid amide derivs. for Li
batteries)

IT 3967-54-2, 4-Chloro-1,3-dioxolan-2-one 114435-02-8,
4-Fluoro-1,3-dioxolan-2-one

(solvent; electrolytic solns. containing halogen-containing
cyclic carbonic acid ester derivs. and inorg. acid amide derivs.
for Li batteries)

L45 ANSWER 9 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:508119 HCAPLUS Full-text

DOCUMENT NUMBER: 146:484536

TITLE: Electrolytic solutions containing
phosphorus compounds and secondary lithium
batteries using them

INVENTOR(S): Kubota, Tadahiko; Ihara, Masayuki

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 33pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

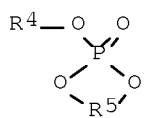
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2007115583	A	20070510	JP 2005-307228	20051021
PRIORITY APPLN. INFO.:			JP 2005-307228	20051021

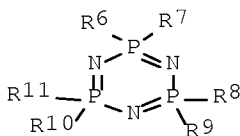
OTHER SOURCE(S): MARPAT 146:484536

ED Entered STN: 10 May 2007

GI

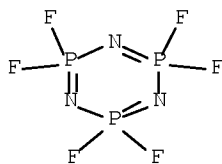


I



II

- AB The electrolytic solns. contain halogenated ethylene carbonates, and ≥ 1 P compds. selected from $R1OP(O)(OR2)OR3$ [$R1-R3 = C1-10$ (un)substituted alkyl, (un)substituted alkenyl, (un)substituted alkynyl, (un)substituted aralkyl, (un)substituted aryl], phosphates I [$R4 = C1-10$ (un)substituted alkyl, (un)substituted alkenyl, (un)substituted alkynyl, (un)substituted aralkyl, (un)substituted aryl; $R5 = C2-4$ alkylene], and phosphazenes II [$R6-R11 = C1-10$ (un)substituted alkyl, (un)substituted alkenyl, (un)substituted alkynyl, (un)substituted aralkyl, (un)substituted aryl, (un)substituted alkoxy, (un)substituted phenoxy, halo], and optionally contain vinylene carbonate. The batteries show high capacity retention after continuous charging at high temperature
- IT 15599-91-4
(electrolytic solns. containing phosphorus compds. for secondary lithium batteries with good high-temperature characteristics)
- RN 15599-91-4 HCAPLUS
- CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST lithium battery electrolyte phosphate
halogenated ethylene carbonate; phosphaze halogenated ethylene carbonate lithium battery electrolyte;
electrolytic soln cyclic phosphate halogenated ethylene carbonate
- IT Phosphates, uses
(cyclic esters; electrolytic solns. containing phosphorus compds. for secondary lithium batteries with good high-temperature characteristics)
- IT Battery electrolytes
(electrolytic solns. containing phosphorus compds. for secondary lithium batteries with good

high-temperature characteristics)

IT Secondary batteries
(lithium; electrolytic solns. containing phosphorus
compds. for secondary lithium batteries with
good high-temperature characteristics)

IT 78-40-0, Triethyl phosphate 115-86-6, Triphenyl phosphate
512-56-1, Trimethyl phosphate 867-17-4, Diethylmethyl phosphate
940-71-6 15599-91-4 33027-66-6 33027-67-7 33027-68-8
137584-16-8 471894-05-0 607744-75-2 935682-14-7 935682-15-8
(electrolytic solns. containing phosphorus compds. for
secondary lithium batteries with good
high-temperature characteristics)

IT 872-36-6, Vinylene carbonate 3967-54-2, 4-Chloro-1,3-dioxolan-2-one
114435-02-8, 4-Fluoro-1,3-dioxolan-2-one
(electrolytic solns. containing phosphorus compds. for
secondary lithium batteries with good
high-temperature characteristics)

L45 ANSWER 10 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2007:145522 HCAPLUS Full-text

DOCUMENT NUMBER: 146:232676

TITLE: Lithium secondary batteries
suppressing electrolytes from
decomposing at high temperature and their
cathodes and cathode materials

INVENTOR(S): Ichihashi, Akira; Kano, Gentaro; Okawa, Takeshi

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2007035391	A	20070208	JP 2005-215427	20050726
PRIORITY APPLN. INFO.:			JP 2005-215427	20050726

OTHER SOURCE(S): MARPAT 146:232676

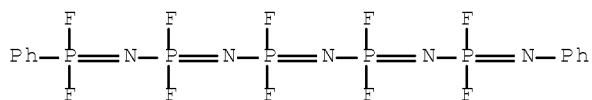
ED Entered STN: 09 Feb 2007

AB The battery cathodes contain materials coated with phosphazenes preferably
represented by X3(X1X2P:N)nX4 [X1-X4 = F, Cl, Br, alkoxy, phenyl(oxy); n ≥ 4].
The cathodes may contain Li- and transition metal-containing active mass
compds. Batteries containing the cathodes, anodes, and electrolytes inside
film-type packages are also claimed. The batteries show less swelling on
high-temperature uses.

IT 924658-28-6
(active-mass coatings; battery cathodes having
phosphazene coatings on active masses and suppressing decomposition at
high temperature)

RN 924658-28-6 HCAPLUS

CN Phosphoramidimidic difluoride, N'-(P,P-difluoro-N-phenylphosphinimyl)-
N-[[[(difluorophenylphosphoranylidene)amino]difluorophosphoranylidene
]amino]difluorophosphoranylidene]- (CA INDEX NAME)



- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST lithium secondary battery cathode
phosphazene coating; polydifluorophosphazene battery
cathode coating high temp swelling prevention
- IT Battery electrolytes
(battery cathodes having phosphazene coatings
on active masses and suppressing decomposition at high temperature)
- IT Polyphosphazenes
(chlorine-containing, active-mass coatings; battery
cathodes having phosphazene coatings on active masses and
suppressing decomposition at high temperature)
- IT Polyphosphazenes
(fluorine-containing, active-mass coatings; battery
cathodes having phosphazene coatings on active masses and
suppressing decomposition at high temperature)
- IT Fluoropolymers, uses
(gels, electrolytes; battery cathodes
having phosphazene coatings on active masses and suppressing
decomposition at high temperature)
- IT Secondary batteries
(lithium; battery cathodes having
phosphazene coatings on active masses and suppressing decomposition at
high temperature)
- IT Fluoropolymers, uses
(polyphosphazene-, active-mass coatings; battery
cathodes having phosphazene coatings on active masses and
suppressing decomposition at high temperature)
- IT 924658-15-1 924658-17-3 924658-19-5 924658-21-9 924658-23-1
924658-25-3 924658-27-5 924658-28-6
(active-mass coatings; battery cathodes having
phosphazene coatings on active masses and suppressing decomposition at
high temperature)
- IT 7782-42-5, Graphite, uses
(anodes; battery cathodes having
phosphazene coatings on active masses and suppressing decomposition at
high temperature)
- IT 12190-79-3, Lithium cobaltate (LiCoO₂)
(cathode active mass; battery cathodes
having phosphazene coatings on active masses and suppressing
decomposition at high temperature)
- IT 21324-40-3, Lithium hexafluorophosphate
(electrolytes, infiltrated in polymer gels;
battery cathodes having phosphazene coatings on
active masses and suppressing decomposition at high temperature)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
(gels, electrolytes; battery cathodes
having phosphazene coatings on active masses and suppressing
decomposition at high temperature)

10/518,634

TITLE: Novel redox shuttles for overcharge protection of
lithium batteries
INVENTOR(S): Amine, Khalil; Chen, Zonghai; Wang, Qingzheng
PATENT ASSIGNEE(S): The University of Chicago, USA
SOURCE: U.S. Pat. Appl. Publ., 18pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060199080	A1	20060907	US 2006-366891	20060301
WO 2006094069	A2	20060908	WO 2006-US7297	20060301
WO 2006094069	A3	20070607		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, ME, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				
GB 2437902	A	20071107	GB 2007-17003	20060301
KR 2008012832	A	20080212	KR 2007-722140	20070928
CN 101160684	A	20080409	CN 2006-80012112	20071012
PRIORITY APPLN. INFO.:			US 2005-657850P	P 20050302
			WO 2006-US7297	W 20060301

OTHER SOURCE(S): MARPAT 145:317962

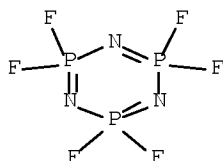
ED Entered STN: 08 Sep 2006

AB The present invention is generally related to electrolytes containing novel redox shuttles for overcharge protection of lithium-ion batteries. The redox shuttles are capable of thousands hours of overcharge tolerance and have a redox potential at about 3-5.5 V vs.Li and particularly about 4.4-4.8 V vs.Li and particularly about 4.4-4.8 V vs.Li. Accordingly, in one aspect the invention provides electrolytes comprising an alkali metal salt; a polar aprotic solvent; and a redox shuttle additive that is an aromatic compound having at least one aromatic ring with four or more electroneg. substituents, two or more oxygen atoms bonded to the aromatic ring, and no hydrogen atoms bonded to the aromatic ring; and wherein the electrolyte solution is substantially nonaq. Further there are provided electrochem. devices employing the electrolyte and methods of making the electrolyte.

IT 15599-91-4D, aryloxy derivs.
(redox shuttles for overcharge protection of lithium batteries)

RN 15599-91-4 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



- INCL 429326000; 429327000; 429328000; 429329000; 429212000; 429246000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery overcharge protection redox shuttle
 IT Cyclophosphazenes
 (aryloxy derivative; redox shuttles for overcharge protection of lithium batteries)
 IT Secondary batteries
 (lithium; redox shuttles for overcharge protection of lithium batteries)
 IT Battery electrolytes
 (redox shuttles for overcharge protection of lithium batteries)
 IT Alkali metal salts
 (redox shuttles for overcharge protection of lithium batteries)
 IT Aromatic compounds
 (redox shuttles for overcharge protection of lithium batteries)
 IT 60-29-7, Diethyl ether, uses 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-60-4, Propyl acetate 126-33-0, Sulfolane 141-78-6, Ethyl acetate, uses 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7439-93-2D, Lithium, salt 7791-03-9 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132404-42-3 132843-44-8 193214-24-3, Aluminum cobalt lithium nickel oxide (Al_{0.05}Co_{0.15}LiNi_{0.80}O₂) 244761-29-3 409071-16-5 678966-16-0
 (redox shuttles for overcharge protection of lithium batteries)
 IT 78-19-3, 3,9-Divinyl-2,4,8,10-tetraoxaspiro[5,5]undecane 84-15-1, o-Terphenyl 84-15-1D, o-Terphenyl, aryloxy derivative 86-74-8D, Carbazole, aryloxy derivative 86-74-8D, Carbazole, aryloxy trivinylphosphate derivs. 88-12-0, 1-Vinylpyrrolidin-2-one, uses 88-14-2D, 2-Furoic acid, aryloxy derivative 91-19-0, Quinoxaline 91-20-3, Naphthalene, uses 91-22-5, Quinoline, uses 91-22-5D, Quinoline, alkoxy derivative 92-52-4, Biphenyl, uses 92-52-4D, Biphenyl, methoxy vinyl derivs. 96-49-1D, Ethylene carbonate, diaryloxy derivative 96-54-8, n-Methylpyrrole 101-84-8 101-84-8D, Diphenyl ether, diaryloxy derivative 102-09-0, Diphenyl carbonate 102-09-0D, Phenyl carbonate, aryloxy derivative 102-09-0D, Phenyl carbonate, diaryloxy derivative 102-71-6, Triethanolamine, uses 103-29-7, 1,2-Diphenylethane 106-92-3, Allylglycidyl ether 106-99-0, Butadiene, uses 108-32-7D, Propylene carbonate, diaryloxy derivative 109-93-3, Divinyl ether 109-97-7D, Pyrrole, alkoxy derivative 109-97-7D, Pyrrole, aryloxy derivative 109-99-9D, Thf, aryloxy derivative

110-00-9D, Furan, diaryloxy derivative 110-86-1, Pyridine, uses
 110-89-4, Piperidine, uses 110-89-4D, Piperidine, aryloxy derivative
 111-34-2, Butyl vinyl ether 119-65-3, Isoquinoline 120-72-9,
 Indole, uses 120-92-3D, Cyclopentanone, aryloxy derivative 140-67-0,
 4-Allylanisole 142-96-1D, Butyl ether, aryloxy derivative 176-53-4D,
 Ethylene silicate, aryloxy derivative 176-53-4D, Ethylene silicate,
 diaryloxy derivative 287-23-0D, Cyclobutane, aryloxy derivative 288-32-4,
 Imidazole, uses 288-32-4D, Imidazole, aryloxy derivative 289-80-5,
 Pyridazine 289-80-5D, Pyridazine, aryloxy derivative 289-95-2,
 Pyrimidine 290-37-9, Pyrazine 290-37-9D, Pyrazine, aryloxy derivative
 291-37-2D, Cyclotriphosphazene, diaryloxy derivative 503-30-0D, Oxetane,
 aryloxy derivative 614-99-3D, Ethyl-2-furoate, aryloxy derivative 930-22-3
 1072-53-3D, Ethylene sulfate, aryloxy derivative 1072-53-3D, Ethylene
 sulfate, diaryloxy derivative 1118-58-7 1337-81-1, Vinyl Pyridine
 1917-10-8, Vinyl 2-furoate 3724-65-0D, Crotonic acid, aryloxy derivative
 3741-38-6D, Ethylene sulfite, aryloxy derivative 3741-38-6D, Ethylene
 sulfite, diaryloxy derivative 4177-16-6, VinylPyrazine 4245-37-8,
 Vinyl methacrylate 4370-23-4, 1-Vinylpiperidin-2-one 4427-96-7,
 Vinyl ethylene carbonate 5009-27-8D, Cyclopropanone, 2-aryl derivative
 5009-27-8D, Cyclopropanone, 2-aryloxy derivative 5009-27-8D,
 Cyclopropanone, aryloxy derivative 6622-92-0, 2,4-Dimethyl-6-hydroxy-
 pyrimidine 7486-94-4 7570-02-7, Divinyl carbonate 10411-26-4D,
 Butyl carbonate, diaryloxy derivative 11099-06-2D, Ethyl silicate,
 diaryloxy derivative 12789-45-6, Methyl phosphate 12789-45-6D, Methyl
 phosphate, diaryloxy derivative 14265-44-2D, Phosphate, aryloxy derivative
 14861-06-4, Vinyl crotonate 15599-91-4D, aryloxy derivs.
 15896-04-5 16410-02-9 18358-13-9D, Methacrylate, aryloxy derivative
 21994-23-0 23462-75-1, Dihydropyran-3-one 29383-23-1, Vinyl
 Imidazole 30676-86-9 30851-79-7 31094-36-7 32893-16-6, Methyl
 vinyl carbonate 33879-62-8, 2-Vinyloxetane 34721-16-9D, Furoate,
 2-diaryloxy derivative 35143-18-1 36885-49-1, Vinyl phosphate
 37203-76-2, Ethyl phosphate 37275-48-2D, Bipyridine, vinyl methoxy
 derivs. 41824-21-9D, Crotonate, diaryloxy derivative 44414-27-9
 44866-76-4 50337-14-9, 3-Vinylcyclopentanone 51222-11-8
 53627-36-4, β -Vinyl- γ -butyrolactone 55849-58-6
 61548-40-1 65967-52-4 66166-61-8, 3-Vinylcyclobutanone
 66281-01-4 66281-16-1 66956-76-1 72607-84-2 75454-86-3
 77208-21-0 80345-98-8 99018-41-4 121712-01-4 139669-84-4
 247229-51-2 365458-36-2 557084-91-0 856785-12-1 891828-02-7
 891828-03-8 891828-04-9 891828-05-0 891828-06-1 897028-08-9
 897028-09-0 897028-10-3 897028-11-4 897028-12-5 897028-13-6
 897028-14-7 897028-15-8 897028-16-9 897028-17-0 897028-18-1
 897028-19-2 897028-20-5 897028-21-6 897028-22-7 897028-24-9
 897028-25-0 897028-26-1 897028-27-2 897028-28-3 897028-28-3D,
 diaryloxy derivative 897381-27-0 897381-28-1 897381-29-2
 897381-31-6 897381-36-1 897381-38-3 897381-40-7 897381-41-8
 897381-42-9 897381-43-0 897381-44-1 897381-45-2 897381-46-3
 897381-47-4 908587-10-0 908587-13-3 908587-17-7 908587-21-3
 908587-22-4 908599-70-2 908599-71-3 908599-72-4 908599-73-5
 908599-74-6 908599-75-7 908599-76-8

(redox shuttles for overcharge protection of lithium
 batteries)

L45 ANSWER 12 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:845445 HCAPLUS Full-text

DOCUMENT NUMBER: 145:252394

TITLE: Electrolyte solution and secondary
 lithium battery

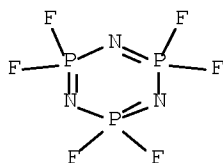
INVENTOR(S): Ichihashi, Akira; Kano, Gentaro; Tsuda, Karin;
 Kimura, Fumiko

10/518,634

PATENT ASSIGNEE(S): Sony Corporation, Japan
 SOURCE: PCT Int. Appl., 45pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006088002	A1	20060824	WO 2006-JP302490	20060214
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
KR 2007103041	A	20071022	KR 2007-718899	20070817
CN 101124695	A	20080213	CN 2006-80005446	20070820
PRIORITY APPLN. INFO.:			JP 2005-41894	A 20050218
			JP 2005-157100	A 20050530
			WO 2006-JP302490	W 20060214

ED Entered STN: 24 Aug 2006
 AB The electrolyte solution contains 4-fluoro-1,3-dioxolane-one and a compound having a proton-capturing function. The battery has a cathode, an anode, and the above electrolyte solution
 IT 15599-91-4
 (electrolyte solns. containing 4-fluoro-1,3-dioxolane-one and proton capturing compds. for secondary lithium batteries)
 RN 15599-91-4 HCAPLUS
 CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary lithium battery electrolyte
 dioxolane proton capturing compd
 IT Battery electrolytes
 (electrolyte solns. containing 4-fluoro-1,3-dioxolane-one and

proton capturing compds. for secondary lithium
batteries)

IT Secondary batteries

(lithium; electrolyte solns. containing
4-fluoro-1,3-dioxolane-one and proton capturing compds. for
secondary lithium batteries)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide
(CoLiO₂) 21324-40-3, Lithium hexafluorophosphate
(electrolyte solns. containing 4-fluoro-1,3-dioxolane-one and
proton capturing compds. for secondary lithium
batteries)

IT 100-97-0, Hexamethylenetetramine, uses 110-86-1, Pyridine, uses
283-74-9, Hexaethylenetetramine 290-37-9, Pyrazine 290-87-9,
1,3,5-Triazine 603-34-9, Triphenyl amine 940-71-6 1121-07-9
3013-92-1 5391-40-2 15599-91-4 19836-78-3 90076-65-6
114435-02-8 132843-44-8
(electrolyte solns. containing 4-fluoro-1,3-dioxolane-one and
proton capturing compds. for secondary lithium
batteries)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L45 ANSWER 13 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:511339 HCAPLUS Full-text

DOCUMENT NUMBER: 145:30866

TITLE: Nonflammable porous polyolefin films, separators
therefrom, and nonaqueous electrolyte
lithium batteries therewith

INVENTOR(S): Otsuki, Masashi

PATENT ASSIGNEE(S): Bridgestone Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2006137789	A	20060601	JP 2004-326235	20041110
PRIORITY APPLN. INFO.:			JP 2004-326235	20041110

OTHER SOURCE(S): MARPAT 145:30866

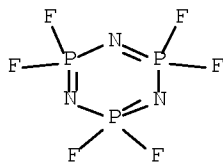
ED Entered STN: 01 Jun 2006

AB The polyolefin films comprise ultrahigh-d. polyolefins with thickness 0.5-75
μm, porosity 30-85%, permeability shutdown temperature <135°, and Mw ≥7 + 105,
low-d. polyolefins, and P-containing fireproofing agents (e.g., phosphazenes,
phosphonates, or phosphinates). In the batteries (primary or secondary
batteries) equipped with separators from the films, overcurrent is safely
prevented by their shutdown function and nonflammability.

IT 15599-91-4D, ethyleneglycoxy-containing
(fireproofing agents; nonflammable porous polyolefin films for
nonaq. electrolyte lithium battery
separators)

RN 15599-91-4 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-
hexahydro- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

ST battery separator safety nonflammable porous polyolefin;
 nonaq electrolyte lithium battery
 separator porous polyethylene film; phosphazene phosphonate
 phosphinate fireproofing agent battery separator

IT Primary batteries
 (lithium; nonflammable porous polyolefin films for nonaq.
 electrolyte lithium battery separators)

IT Fireproofing agents
 Primary battery separators
 Safety
 (nonflammable porous polyolefin films for nonaq.
 electrolyte lithium battery separators)

IT Polyolefins
 (porous films; nonflammable porous polyolefin films for nonaq.
 electrolyte lithium battery separators)

IT 358-74-7, Diethyl fluorophosphate 460-52-6, Ethyl difluorophosphate
 940-71-6 1184-10-7 15599-91-4D, ethyleneglycoxy-containing
 (fireproofing agents; nonflammable porous polyolefin films for
 nonaq. electrolyte lithium battery
 separators)

IT 9002-88-4, Polyethylene
 (porous films; nonflammable porous polyolefin films for nonaq.
 electrolyte lithium battery separators)

L45 ANSWER 14 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:343424 HCAPLUS Full-text

DOCUMENT NUMBER: 144:394653

TITLE: Nonaqueous electrolyte solution, and
 secondary nonaqueous electrolyte
 battery having the solution

INVENTOR(S): Horikawa, Yasuo; Otsuki, Masashi; Eguchi,
 Shinichi; Kanno, Hiroshi

PATENT ASSIGNEE(S): Bridgestone Corporation, Japan

SOURCE: PCT Int. Appl., 29 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006038614	A1	20060413	WO 2005-JP18347	20051004
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KP,			

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KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN,
 MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,
 SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA,
 UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
 IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
 TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 JP 2006107910 A 20060420 JP 2004-292479 20041005
 JP 2006286571 A 20061019 JP 2005-108711 20050405
 EP 1798792 A1 20070620 EP 2005-790529 20051004
 R: DE, FR
 CN 101057355 A 20071017 CN 2005-80039032 20051004
 US 20080153005 A1 20080626 US 2007-576183 20070328
 PRIORITY APPLN. INFO.: JP 2004-292479 A 20041005
 JP 2005-108711 A 20050405
 WO 2005-JP18347 W 20051004

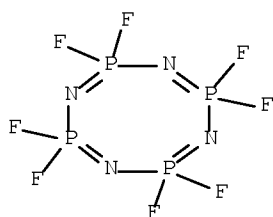
ED Entered STN: 14 Apr 2006

AB Disclosed is a nonaq. electrolyte solution which exhibits incombustibility even in high oxygen concentration environments. The electrolyte solution comprises an electrolyte salt and a nonaq. solvent, containing a cyclic phosphazene compound: (NPR₁)₂n (R₁s = halo or monovalent substituent; and n = 3-4) and a fluorophosphate compound: PFR₂2=O (R₂s = halo, alkoxy, or aryloxy group, and ≥1 of the two R₂s = alkoxy or aryloxy group). The battery has the above electrolyte solution, a cathode, and an anode.

IT 14700-00-6
 (electrolyte solns. containing cyclic phosphazene compds. and fluorophosphate compds. for secondary batteries)

RN 14700-00-6 HCAPLUS

CN 2λ5,4λ5,6λ5,8λ5-1,3,5,7,2,4,6,8-
 Tetrizatetraphosphocine, 2,2,4,4,6,6,8,8-octafluoro- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery electrolyte solvent cyclic phosphazene compd fluorophosphate compd

IT Battery electrolytes
 Secondary batteries

(electrolyte solns. containing cyclic phosphazene compds. and fluorophosphate compds. for secondary batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 (electrolyte solns. containing cyclic phosphazene compds. and

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fluorophosphate compds. for secondary batteries)

IT 398-62-9, 4-Fluoroveratrole 459-60-9 460-52-6 1126-52-9
5954-50-7 14700-00-6 22382-13-4 26078-16-0 26471-90-9
33027-66-6 33027-67-7 33027-68-8 55593-38-9 70765-59-2
324547-55-9 607744-75-2 882692-99-1

(electrolyte solns. containing cyclic phosphazene compds. and
fluorophosphate compds. for secondary batteries)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L45 ANSWER 15 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:1283421 HCAPLUS Full-text

DOCUMENT NUMBER: 144:38308

TITLE: Flame-inhibiting additives for nonaqueous
electrolytes of batteries, and
nonaqueous-electrolyte batteries

INVENTOR(S): Otsuki, Masatomo; Eguchi, Shinichi

PATENT ASSIGNEE(S): Bridgestone Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2005340161	A	20051208	JP 2004-353906	20041207
PRIORITY APPLN. INFO.:			JP 2004-130800	A 20040427

OTHER SOURCE(S): MARPAT 144:38308

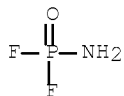
ED Entered STN: 08 Dec 2005

AB The nonq. electrolytes of batteries contain compound additives releasing
phosphine oxides bearing P-F bonds and/or P-NH2 bonds as flame-inhibiting
substances upon combustion. The compound additives may be phosphazenes. The
flame-inhibiting substances may be fire extinguishers, flame-retardant agents,
and/or nonflammable substances. Also claimed are the nonaq. electrolytes and
batteries employing the electrolytes.

IT 15391-51-2P, Phosphoramidic difluoride
(fireproofing agent; nonaq.-electrolyte battery
containing flame-inhibiting (phosphazene) additive releasing
fireproofing agent)

RN 15391-51-2 HCAPLUS

CN Phosphoramidic difluoride (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery electrolyte fireproofing
agent phosphazene; nonaq electrolyte battery

additive fireproofing agent phosphazene; phosphine oxide fire
retardant release lithium battery
electrolyte

- IT Primary batteries
Secondary batteries
(lithium; nonaq.-electrolyte battery
containing flame-inhibiting (phosphazene) additive releasing
fireproofing agent)
- IT Battery electrolytes
Fire extinguishers
Fireproofing agents
(nonaq.-electrolyte battery containing
flame-inhibiting (phosphazene) additive releasing fireproofing
agent)
- IT Phosphazenes
(releasing phosphine oxides upon combustion; in nonaq.-
electrolyte battery containing flame-inhibiting
(phosphazene) additive releasing fireproofing agent)
- IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
(electrolyte solvent; in nonaq.-electrolyte
battery containing flame-inhibiting (phosphazene) additive
releasing fireproofing agent)
- IT 5954-50-7P 15391-51-2P, Phosphoramidic difluoride
22382-13-4P
(fireproofing agent; nonaq.-electrolyte battery
containing flame-inhibiting (phosphazene) additive releasing
fireproofing agent)
- IT 870894-67-0 870894-68-1 871030-17-0
(releasing phosphine oxides upon combustion; in nonaq.-
electrolyte battery containing flame-inhibiting
(phosphazene) additive releasing fireproofing agent)

L45 ANSWER 16 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:1170694 HCAPLUS Full-text

DOCUMENT NUMBER: 143:443493

TITLE: Nonaqueous electrolyte solution for
battery and the battery using
the solution

INVENTOR(S): Horikawa, Yasuo; Eguchi, Shinichi; Ohtsuki,
Masashi

PATENT ASSIGNEE(S): Bridgestone Corporation, Japan

SOURCE: PCT Int. Appl., 16 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

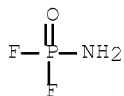
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2005104289	A1	20051103	WO 2005-JP5920	20050329
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,			
	CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,			
	GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,			
	KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,			
	MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,			
	SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US,			
	UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,			
	AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,			

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DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1739784	A1	20070103	EP 2005-727866	20050329
R: DE, FR				
CN 1943070	A	20070404	CN 2005-80011705	20050329
US 20070202417	A1	20070830	US 2006-578602	20061016
PRIORITY APPLN. INFO.:			JP 2004-122959	A 20040419
			JP 2004-292668	A 20041005
			WO 2005-JP5920	W 20050329

ED Entered STN: 03 Nov 2005
AB The electrolyte solution contains a phosphine oxide compound having a P-F bond and/or a P-NH₂ bond in a mol. and an electrolyte salt. The battery has the above electrolyte solution, a cathode, and an anode .
IT 15391-51-2, Phosphoramidic difluoride
(nonaq. electrolyte solns. containing phosphine oxide compound for primary or secondary batteries)
RN 15391-51-2 HCAPLUS
CN Phosphoramidic difluoride (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M006-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery nonaq electrolyte soln phosphine oxide
compd safety
IT Battery electrolytes
Primary batteries
Secondary batteries
(nonaq. electrolyte solns. containing phosphine oxide compound for primary or secondary batteries)
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide
(CoLiO₂) 21324-40-3, Lithium hexafluorophosphate
(nonaq. electrolyte solns. containing phosphine oxide compound for primary or secondary batteries)
IT 14700-14-2, Phosphorodiamidic fluoride 15391-51-2,
Phosphoramidic difluoride 22382-13-4
(nonaq. electrolyte solns. containing phosphine oxide compound for primary or secondary batteries)
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

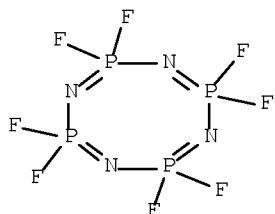
L45 ANSWER 17 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:611359 HCAPLUS Full-text
DOCUMENT NUMBER: 143:136272
TITLE: Nonaqueous electrolytic solution for
battery with improved safety

10/518,634

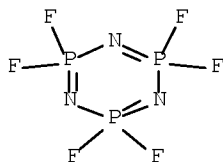
INVENTOR(S): Otsuki, Masatomo; Ogino, Takao
 PATENT ASSIGNEE(S): Bridgestone Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005190873	A	20050714	JP 2003-432139	20031226
WO 2005064734	A1	20050714	WO 2004-JP19218	20041222
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1699105	A1	20060906	EP 2004-807575	20041222
R: DE, FR				
CN 1906796	A	20070131	CN 2004-80040997	20041222
US 20070172740	A1	20070726	US 2006-583412	20060620
PRIORITY APPLN. INFO.:			JP 2003-432031	A 20031226
			JP 2003-432139	A 20031226
			WO 2004-JP19218	W 20041222

OTHER SOURCE(S): MARPAT 143:136272
 ED Entered STN: 15 Jul 2005
 AB The solution contains aprotic organic solvents and supporting salts, wherein each solvent contains a P- and/or N-containing compound (e.g., phosphazene compound) satisfying $|T - t| \leq 25^\circ$ (T and t are b.p. of the solvent and the compound, resp.). The battery using the solution is also claimed. The P- and/or N-containing compound prevents the organic solvents from ignition.
 IT 14700-00-6 15599-91-4
 (electrolyte containing aprotic organic solvents, P- and/or N-containing compds., and salts for polymer battery with improved safety)
 RN 14700-00-6 HCAPLUS
 CN 2λ5, 4λ5, 6λ5, 8λ5-1, 3, 5, 7, 2, 4, 6, 8-
 Tetrazatetraphosphocine, 2, 2, 4, 4, 6, 6, 8, 8-octafluoro- (CA INDEX NAME)



RN 15599-91-4 HCAPLUS
 CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M006-16
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST phosphorus nitrogen compd fire prevention nonaq battery;
 aprotic org solvent electrolyte phosphazene battery
 safety
 IT Solvents
 (aprotic; electrolyte containing aprotic organic solvents, P-
 and/or N-containing compds., and salts for polymer battery
 with improved safety)
 IT Battery electrolytes
 Fireproofing agents
 (electrolyte containing aprotic organic solvents, P- and/or
 N-containing compds., and salts for polymer battery with
 improved safety)
 IT Cyclophosphazenes
 (electrolyte containing aprotic organic solvents, P- and/or
 N-containing compds., and salts for polymer battery with
 improved safety)
 IT Secondary batteries
 (lithium; electrolyte containing aprotic organic
 solvents, P- and/or N-containing compds., and salts for polymer
 battery with improved safety)
 IT 14700-00-6 15599-91-4 33027-66-6 33027-68-8
 55593-37-8 55593-38-9 55593-39-0
 (electrolyte containing aprotic organic solvents, P- and/or
 N-containing compds., and salts for polymer battery with
 improved safety)
 IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3,
 Lithium hexafluorophosphate
 (electrolyte; electrolyte containing aprotic organic
 solvents, P- and/or N-containing compds., and salts for polymer
 battery with improved safety)
 IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7,
 Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 616-38-6,
 Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
 (solvent; electrolyte containing aprotic organic solvents, P-
 and/or N-containing compds., and salts for polymer battery
 with improved safety)

L45 ANSWER 18 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:609202 HCAPLUS Full-text
 DOCUMENT NUMBER: 143:136266
 TITLE: Electrolyte for polymer battery
 with improved safety
 INVENTOR(S): Otsuki, Masami; Ogino, Takao
 PATENT ASSIGNEE(S): Bridgestone Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005190869	A	20050714	JP 2003-432031	20031226
WO 2005064734	A1	20050714	WO 2004-JP19218	20041222
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1699105	A1	20060906	EP 2004-807575	20041222
R: DE, FR				
CN 1906796	A	20070131	CN 2004-80040997	20041222
US 20070172740	A1	20070726	US 2006-583412	20060620
PRIORITY APPLN. INFO.:			JP 2003-432031	A 20031226
			JP 2003-432139	A 20031226
			WO 2004-JP19218	W 20041222

ED Entered STN: 14 Jul 2005

AB The electrolyte contains aprotic organic solvents, polymers, and supporting salts, wherein each solvent contains a P- and/or N-containing compound satisfying $|T - t| \leq 25^\circ$ (T and t are b.p. of the solvent and the compound, resp.). The battery using the electrolyte is also claimed. The P- and/or N-containing compound prevents the organic solvents from ignition.

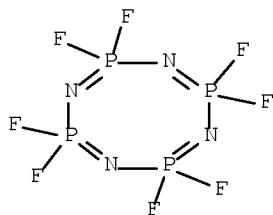
IT 14700-00-6 15599-91-4

(electrolyte containing aprotic organic solvents and P- and/or N-containing compds. for polymer battery with improved safety)

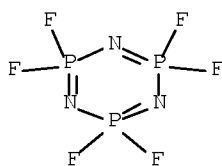
RN 14700-00-6 HCAPLUS

CN 2λ5, 4λ5, 6λ5, 8λ5-1, 3, 5, 7, 2, 4, 6, 8-

Tetrazatetraphosphocine, 2, 2, 4, 4, 6, 6, 8, 8-octafluoro- (CA INDEX NAME)



RN 15599-91-4 HCAPLUS
 CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01B001-06; H01M006-18
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST phosphorus nitrogen compd fire prevention polymer battery;
 aprotic org solvent electrolyte polymer battery
 safety
 IT Solvents
 (aprotic; electrolyte containing aprotic organic solvents and P-
 and/or N-containing compds. for polymer battery with improved
 safety)
 IT Battery electrolytes
 Fireproofing agents
 Polymer electrolytes
 (electrolyte containing aprotic organic solvents and P- and/or
 N-containing compds. for polymer battery with improved
 safety)
 IT Polyoxyalkylenes, uses
 (electrolyte containing aprotic organic solvents and P- and/or
 N-containing compds. for polymer battery with improved
 safety)
 IT Cyclophosphazenes
 (electrolyte containing aprotic organic solvents and P- and/or
 N-containing compds. for polymer battery with improved
 safety)
 IT Secondary batteries
 (lithium; electrolyte containing aprotic organic
 solvents and P- and/or N-containing compds. for polymer battery
 with improved safety)
 IT 14700-00-6 15599-91-4 33027-66-6 55593-37-8
 55593-39-0
 (electrolyte containing aprotic organic solvents and P- and/or
 N-containing compds. for polymer battery with improved

- safety)
- IT 7439-93-2D, Lithium, poly(ethylene oxide) complexes
25322-68-3D, Poly(ethylene oxide), lithium complex
(electrolyte; electrolyte containing aprotic organic solvents and P- and/or N-containing compds. for polymer battery with improved safety)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
(solvent; electrolyte containing aprotic organic solvents and P- and/or N-containing compds. for polymer battery with improved safety)

L45 ANSWER 19 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:368511 HCAPLUS Full-text

DOCUMENT NUMBER: 142:433056

TITLE: Secondary nonaqueous electrolyte battery

INVENTOR(S): Koto, Tomoko

PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2005116306	A	20050428	JP 2003-348133	20031007
PRIORITY APPLN. INFO.:			JP 2003-348133	20031007

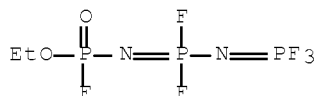
ED Entered STN: 29 Apr 2005

AB The battery has a cathode, containing a Li-Ni-Mn composite oxide : $\text{Li}_x\text{Ni}_y\text{Mn}_{2-y}\text{O}_{4-\delta}$ ($0 < x < 1.1$; $0.45 < y < 0.55$; and $0 \leq \delta < 0.4$) as a cathode active mass, an anode, and a nonaq. electrolyte solution; where the electrolyte solution contains 0.1-20 mass%. phosphazene derivative

IT 850650-07-6
(cathodes containing lithium manganese nickel oxides and electrolytes containing phosphazene derivs. for secondary lithium batteries)

RN 850650-07-6 HCAPLUS

CN Phosphoramidofluoridic acid, N-[difluoro[(trifluorophosphoranylidene)amino]phosphoranylidene]-, ethyl ester (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery cathode
lithium manganese nickel oxide; battery

- electrolyte phosphazene deriv
- IT Battery cathodes
Battery electrolytes
(cathodes containing lithium manganese nickel
oxides and electrolytes containing phosphazene derivs. for
secondary lithium batteries)
- IT Polyphosphazenes
(cyclic; cathodes containing lithium manganese
nickel oxides and electrolytes containing phosphazene derivs.
for secondary lithium batteries)
- IT Secondary batteries
(lithium; cathodes containing lithium
manganese nickel oxides and electrolytes containing
phosphazene derivs. for secondary lithium
batteries)
- IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
7782-42-5, Graphite, uses 12031-75-3, Lithium manganese
nickel oxide (LiMn_{1.5}Ni_{0.5}O₄) 14283-07-9, Lithium
tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
(cathodes containing lithium manganese nickel
oxides and electrolytes containing phosphazene derivs. for
secondary lithium batteries)
- IT 850650-07-6
(cathodes containing lithium manganese nickel
oxides and electrolytes containing phosphazene derivs. for
secondary lithium batteries)

L45 ANSWER 20 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:347339 HCAPLUS Full-text
DOCUMENT NUMBER: 142:414502
TITLE: Secondary nonaqueous electrolyte
battery

INVENTOR(S): Nishie, Katsushi
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005036690	A1	20050421	WO 2004-JP15097	20041006
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
CN 1871740	A	20061129	CN 2004-80029496	20041006
US 20070072084	A1	20070329	US 2006-574952	20060407

PRIORITY APPLN. INFO.:

JP 2003-348134

A 20031007

WO 2004-JP15097

W 20041006

ED Entered STN: 22 Apr 2005

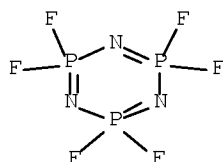
AB The battery has an anode which contains a Si-containing material, a cathode, and a nonaq. electrolyte solution; where the electrolyte solution contains a phosphazene derivative

IT 15599-91-4

(anode having Si containing material and electrolyte solns. having phosphazene derivs. for secondary batteries)

RN 15599-91-4 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M004-02; H01M004-38; H01M004-48; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery anode silicon contg material

electrolyte phosphazene deriv

IT Battery electrolytes

Secondary batteries

(anode having Si containing material and electrolyte solns. having phosphazene derivs. for secondary batteries)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 7631-86-9D, Silicon oxide, nonstoichiometric 7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate 52627-24-4, Cobalt lithium oxide

(anode having Si containing material and electrolyte solns. having phosphazene derivs. for secondary batteries)

IT 562-88-9 940-71-6 1065-05-0 7440-21-3, Silicon, uses

15599-91-4 602299-82-1 607744-75-2 850424-61-2

850427-44-0 850427-45-1

(anode having Si containing material and electrolyte solns. having phosphazene derivs. for secondary batteries)

IT 7440-44-0, Carbon, uses

(mesophase micro beads; anode having Si containing material and electrolyte solns. having phosphazene derivs. for secondary batteries)

REFERENCE COUNT:

10

THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 21 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

10/518,634

ACCESSION NUMBER: 2004:589783 HCAPLUS Full-text
 DOCUMENT NUMBER: 141:126373
 TITLE: Separator for nonaqueous electrolyte
 battery
 INVENTOR(S): Kanno, Hiroshi; Otsuki, Masashi; Eguchi, Shinichi
 PATENT ASSIGNEE(S): Bridgestone Corporation, Japan
 SOURCE: PCT Int. Appl., 32 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004062002	A1	20040722	WO 2003-JP16360	20031219
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2003289453	A1	20040729	AU 2003-289453	20031219
EP 1603175	A1	20051207	EP 2003-780936	20031219
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1732580	A	20060208	CN 2003-80107738	20031219
US 20060073381	A1	20060406	US 2005-540837	20050627
PRIORITY APPLN. INFO.:			JP 2002-380683	A 20021227
			WO 2003-JP16360	W 20031219

ED Entered STN: 23 Jul 2004

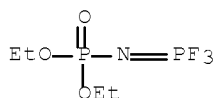
AB The separator, which is incombustible even when the inside of a battery has a high temperature and useful for a primary or secondary Li battery, comprises a micro-porous film formed by adding a phosphazene derivative and/or an isomer of a phosphazene derivative to a polymer.

IT 722454-84-4

(separators containing phosphazene derivative added polymers for primary and secondary lithium batteries)

RN 722454-84-4 HCAPLUS

CN Phosphoramidic acid, (trifluorophosphoranylidene)-, diethyl ester
 (9CI) (CA INDEX NAME)



IC ICM H01M002-16

ICS H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST nonaq electrolyte battery incombustible separator
 phosphazene deriv added polymer
 IT Primary battery separators
 Secondary battery separators
 (separators containing phosphazene derivative added polymers for primary
 and secondary lithium batteries)
 IT 7439-93-2, Lithium, uses
 (anode; separators containing phosphazene derivative added
 polymers for primary and secondary lithium
 batteries)
 IT 1313-13-9, Manganese dioxide, uses 12190-79-3, Cobalt
 lithium oxide (CoLiO₂)
 (cathode; separators containing phosphazene derivative added
 polymers for primary and secondary lithium
 batteries)
 IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 957-13-1 1184-10-7 2397-48-0
 9002-88-4, Polyethylene 14283-07-9, Lithium
 tetrafluoroborate 33027-68-8 722454-84-4 722454-86-6
 724792-59-0
 (separators containing phosphazene derivative added polymers for primary
 and secondary lithium batteries)
 IT 724792-60-3
 (separators containing phosphazene derivative added polymers for primary
 and secondary nonaq. electrolyte batteries)

L45 ANSWER 22 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2004:570217 HCAPLUS Full-text
 DOCUMENT NUMBER: 141:126304
 TITLE: Additive for secondary battery
 nonaqueous electrolyte solution and the
 battery
 INVENTOR(S): Otsuki, Masashi; Horikawa, Yasuro
 PATENT ASSIGNEE(S): Bridgestone Corporation, Japan
 SOURCE: PCT Int. Appl., 33 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2004059782	A1	20040715	WO 2003-JP16592	20031224
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,				
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,				
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,				
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,				
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE,				
SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,				
VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,				
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE,				
DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,				
SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,				
MR, NE, SN, TD, TG				
AU 2003292764	A1	20040722	AU 2003-292764	20031224
EP 1580832	A1	20050928	EP 2003-768180	20031224

10/518,634

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
CN 1732588 A 20060208 CN 2003-80107739 20031224
US 20060046151 A1 20060302 US 2005-540558 20050624
PRIORITY APPLN. INFO.: JP 2002-377142 A 20021226
WO 2003-JP16592 W 20031224

ED Entered STN: 16 Jul 2004

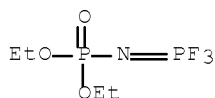
AB The additive comprises a phosphazene derivative represented by R13P = N-X (R1 = halo or monovalent substituent; and X = C, Si, N, P, O and/or S containing organic group). The battery has a nonaq. electrolyte solution comprising the above additive, a cathode, and an anode.

IT 722454-84-4

(additives containing phosphazene derivs. for secondary battery electrolytes)

RN 722454-84-4 HCAPLUS

CN Phosphoramidic acid, (trifluorophosphoranylidene)-, diethyl ester (9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery nonaq
electrolyte additive phosphazene deriv

IT Battery electrolytes

(additives containing phosphazene derivs. for secondary battery electrolytes)

IT Secondary batteries

(Lithium; additives containing phosphazene derivs. for secondary battery electrolytes)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

12190-79-3, Cobalt lithium oxide (CoLiO₂) 21324-40-3,

Lithium hexafluorophosphate

(additives containing phosphazene derivs. for secondary battery electrolytes)

IT 2397-48-0 722454-84-4 722454-85-5 722454-86-6

(additives containing phosphazene derivs. for secondary battery electrolytes)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L45 ANSWER 23 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:162949 HCAPLUS Full-text

DOCUMENT NUMBER: 140:202437

TITLE: Improvement of pigment-sensitized
photoelectrochemical cell

INVENTOR(S): Yoshikawa, Masato; Ohno, Shingo; Kobayashi,
Taichi; Sugimura, Takayuki; Iwabuchi, Yoshinori;
Shiino, Osamu; Sugiyama, Hideo; Horikawa, Yasuo;
Toyosawa, Shinichi

PATENT ASSIGNEE(S): Bridgestone Corporation, Japan
 SOURCE: PCT Int. Appl., 110 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004017452	A1	20040226	WO 2003-JP9983	20030806
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2003254820	A1	20040303	AU 2003-254820	20030806
EP 1536508	A1	20050601	EP 2003-788043	20030806
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
US 20050260786	A1	20051124	US 2005-524261	20050310
PRIORITY APPLN. INFO.:			JP 2002-235393	A 20020813
			JP 2002-235405	A 20020813
			JP 2002-235408	A 20020813
			JP 2002-288939	A 20021001
			JP 2002-317340	A 20021031
			JP 2002-361067	A 20021212
			JP 2002-361068	A 20021212
			JP 2002-361069	A 20021212
			JP 2002-361071	A 20021212
			WO 2003-JP9983	W 20030806

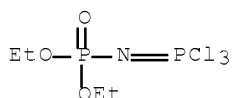
ED Entered STN: 29 Feb 2004

AB An electrolyte for pigment-sensitized solar cells has an oxidation-reduction material loaded on a vulcanized rubber, a polyphosphazene, an EVA resin, or a porous body comprising a polymer that has a three-dimensional continuous network skeleton structure. The photoelectrochem. cell has the above electrolyte placed between dye-sensitized semiconductor electrodes and a counter electrode opposed to the semiconductor electrodes. The photoelectrochem. cells, using the above electrolyte, has improved generation efficiency, durability, and safety and less manufacturing cost.

IT 92713-54-7
 (electrolytes containing oxidation-reduction material loaded vulcanized rubbers, polyphosphazenes, EVA resin, or porous polymers)

for photoelectrochem. cells)

RN 92713-54-7 HCAPLUS

CN Phosphoramidic acid, (trichlorophosphoranylidene)-, diethyl ester
(9CI) (CA INDEX NAME)

IC ICM H01M014-00

ICS H01B001-06; H01L031-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST pigment sensitized photoelectrochem cell electrolyte;
electrolyte vulcanized rubber polyphosphazene EVA resin porous
polymer; oxidn redn material electrolyte photoelectrochem
cell

IT Electrolytes

Photoelectrochemical cells

(electrolytes containing oxidation-reduction material loaded
vulcanized rubbers, polyphosphazenes, EVA resin, or porous polymers
for photoelectrochem. cells)

IT Polycarbonates, uses

Polyesters, uses

(electrolytes containing oxidation-reduction material loaded
vulcanized rubbers, polyphosphazenes, EVA resin, or porous polymers
for photoelectrochem. cells)

IT 7553-56-2, Iodine, uses 7631-86-9, Silica, uses 9010-79-1,

Ethylene-propylene copolymer 9019-71-0, Butadiene-styrene-

vinylpyridine copolymer 10377-51-2, Lithium iodide

13463-67-7, Titania, uses 25038-59-9, PET, uses 50926-11-9, ITO

92713-54-7 218151-78-1, 1,2-Dimethyl-3-propyl imidazolium

iodide 663617-66-1 663617-67-2

(electrolytes containing oxidation-reduction material loaded
vulcanized rubbers, polyphosphazenes, EVA resin, or porous polymers
for photoelectrochem. cells)REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L45 ANSWER 24 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:377216 HCAPLUS Full-text

DOCUMENT NUMBER: 138:371761

TITLE: Primary nonaqueous electrolyte
battery and additive for the
battery electrolyte

INVENTOR(S): Otsuki, Masashi; Eguchi, Shinichi; Kanno, Yushi

PATENT ASSIGNEE(S): Bridgestone Corporation, Japan

SOURCE: PCT Int. Appl., 101 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

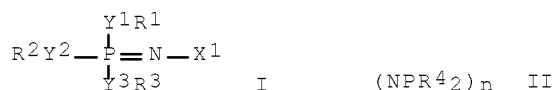
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

WO 2003041197	A1	20030515	WO 2002-JP11173	20021028
W: CA, JP, KR, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				
CA 2465845	A1	20030515	CA 2002-2465845	20021028
EP 1443578	A1	20040804	EP 2002-775406	20021028
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR, BG, CZ, EE, SK				
US 20050123836	A1	20050609	US 2004-494936	20040507
PRIORITY APPLN. INFO.:			JP 2001-341464	A 20011107
			JP 2001-371305	A 20011205
			JP 2001-371356	A 20011205
			JP 2001-371378	A 20011205
			JP 2001-371499	A 20011205
			WO 2002-JP11173	W 20021028

OTHER SOURCE(S): MARPAT 138:371761
 ED Entered STN: 16 May 2003
 GI

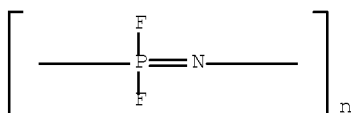


AB The battery uses a nonaq. electrolyte solution containing a supporting salt and a phosphazene derivative additive having viscosity ≤ 100 cP at 25°. The electrolyte solution may contain an aprotic solvent. The additive is preferably I (R1-3 = monovalent substituent or halogen, X1 = organic group containing C, Si, Ge, Sn, N, P, As, Sb, Bi, O, S, Se, Te, and/or Po), Y1-3 = linking group, bond, element or II (R4 = monovalent substituent or halogen, and may differ from each, $n = 3-15$).

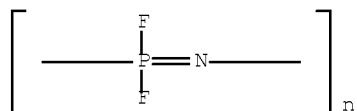
IT 28655-96-1, Poly[nitrilo(difluorophosphoranylidyne)]
 28655-96-1D, Poly[nitrilo(difluorophosphoranylidyne)], alkyl alkoxy or Ph substituted, fluoro derivs.
 (phosphazene derivative additives in electrolytes for primary lithium batteries)

RN 28655-96-1 HCAPLUS

CN Poly[nitrilo(difluorophosphoranylidyne)] (9CI) (CA INDEX NAME)



RN 28655-96-1 HCAPLUS
 CN Poly[nitrilo(difluorophosphoranylidene)] (9CI) (CA INDEX NAME)



IC ICM H01M006-16
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST primary nonaq battery electrolyte soln phosphazene additive
 IT Battery electrolytes
 (phosphazene derivative additives in electrolytes for primary lithium batteries)
 IT 96-48-0, γ -Butyrolactone 108-32-7, Propylene carbonate
 616-38-6, Dimethyl carbonate 90076-65-6
 (phosphazene derivative additives in electrolytes for primary lithium batteries)
 IT 2397-48-0 3654-42-0 28655-96-1,
 Poly[nitrilo(difluorophosphoranylidene)] 28655-96-1D,
 Poly[nitrilo(difluorophosphoranylidene)], alkyl alkoxy or Ph
 substituted, fluoro derivs. 97682-87-6 324575-25-9 524699-03-4
 (phosphazene derivative additives in electrolytes for primary lithium batteries)
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L45 ANSWER 25 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2003:42602 HCAPLUS Full-text
 DOCUMENT NUMBER: 138:109586
 TITLE: Nonaqueous electrolyte battery
 , electrode stabilizing agent,
 phosphazene derivative, and manufacture of the
 derivative
 INVENTOR(S): Otsuki, Masashi; Endo, Shigeki; Ogino, Takao;
 Horikawa, Yasuo
 PATENT ASSIGNEE(S): Bridgestone Corporation, Japan
 SOURCE: PCT Int. Appl., 79 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 2003005479	A1	20030116	WO 2002-JP6571	20020628
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW			

10/518,634

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE,
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,
SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
SN, TD, TG

CA 2451791	A1	20030116	CA 2002-2451791	20020628
AU 2002313297	A1	20030121	AU 2002-313297	20020628
EP 1414097	A1	20040428	EP 2002-738861	20020628
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
CN 1524313	A	20040825	CN 2002-813411	20020628
CN 1697243	A	20051116	CN 2005-10079713	20020628
US 20040191635	A1	20040930	US 2004-482810	20040105
PRIORITY APPLN. INFO.:			JP 2001-204415	A 20010705

JP 2001-207705 A 20010709

JP 2001-207706 A 20010709

JP 2001-242051 A 20010809

JP 2001-242067 A 20010809

CN 2002-813411 A3 20020628

WO 2002-JP6571 W 20020628

OTHER SOURCE(S): MARPAT 138:109586

ED Entered STN: 17 Jan 2003

GI

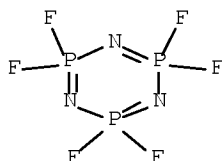


AB The battery has a cathode, a Li intercalating anode, and a nonaq. electrolyte solution containing a supporting electrolyte and a phosphazene derivative, preferably, I (R1-3 = halogen or monovalent substituent, X1 = C, Si, Ge, Sn, N, P, As, Sb, Bi, O, S, Se, Te, Po or a group containing ≥ 1 of the above elements, Y1-3 = bivalent connection group, bivalent element, or a single bond) or II (R4 = halogen or monovalent substituent, n = 3-14). The electrode stabilizing agent is a phosphazene derivative containing groups having multiple bond besides the the multiple bond between N and P. The phosphazene derivs. are prepared by reacting III with alkali metal alkoxide or phenoxide.

IT 15599-91-4D, reaction products with sodium alcoholates
(nonaq. electrolyte solns. containing phosphazene derivs. for
secondary lithium batteries)

RN 15599-91-4 HCAPLUS

CN 1,3,5,2,4,6-Triazatriphosphorine, 2,2,4,4,6,6-hexafluoro-2,2,4,4,6,6-hexahydro- (CA INDEX NAME)



IC ICM H01M010-40
ICS C07F009-6581

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrode stabilizer unsatd phosphazene
deriv; electrolyte phosphazene deriv secondary
lithium battery

IT Battery electrodes
(nonaq. electrolyte solns. containing electrode
stabilizing phosphazene derivs. for secondary lithium
batteries)

IT Battery electrolytes
(nonaq. electrolyte solns. containing phosphazene derivs. for
secondary lithium batteries)

IT Phosphazenes
(nonaq. electrolyte solns. containing phosphazene derivs. for
secondary lithium batteries)

IT 52627-24-4, Cobalt lithium oxide
(nonaq. electrolyte solns. containing electrode
stabilizing phosphazene derivs. for secondary lithium
batteries)

IT 64-17-5D, Ethanol, reaction products with
hexafluorocyclotriphosphazatriene 96-49-1, Ethylene carbonate
105-58-8, Diethyl carbonate 124-41-4D, Sodium methoxide, reaction
products with hexafluorocyclotriphosphazatriene 141-52-6D, Sodium
ethoxide, reaction products with hexafluorocyclotriphosphazatriene
15599-91-4D, reaction products with sodium alcoholates
21324-40-3, Lithium hexafluorophosphate 33027-67-7
471894-05-0
(nonaq. electrolyte solns. containing phosphazene derivs. for
secondary lithium batteries)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L45 ANSWER 26 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:241431 HCAPLUS Full-text

DOCUMENT NUMBER: 137:172293

TITLE: Recent advances in lithium-ion and
lithium-polymer batteries

AUTHOR(S): Venkatesetty, H. V.; Jeong, Y. U.

CORPORATE SOURCE: H. V. Setty Enterprises Inc., Burnsville, MN, USA

SOURCE: Annual Battery Conference on Applications and
Advances, 17th, Long Beach, CA, United States,
Jan. 15-18, 2002 (2002), 173-178. Editor(s): Das,
Radhe S. L.; Frank, Harvey. Institute of
Electrical and Electronics Engineers: New York, N.
Y.
CODEN: 69CKHG; ISBN: 0-7803-7132-1

DOCUMENT TYPE: Conference

LANGUAGE: English

ED Entered STN: 30 Mar 2002

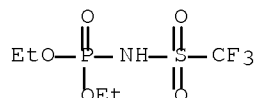
AB Synthesis of new Li salts and copolymers and the properties of solid polymer electrolyte films (SPE) are described. Novel electrolytes and electrode materials were developed to improve the capacity, energy d., cycle life, and the performance of Li batteries while enhancing safety. These batteries have the potential to meet the needs of medical devices and other portable electronic devices. Improved cathode materials are being developed and composite anodes are being prepared and evaluated. With respect to electrolytes, new materials with high conductivity and electrochem. stability to reduce the size and weight of the batteries are studied. The performance characteristics of prototype cells with SPE films as well as solns. of super acid-based Li salts are presented and discussed in terms of their structure and properties.

IT 338746-30-8

(recent advances in lithium-ion and lithium
-polymer batteries)

RN 338746-30-8 HCAPLUS

CN Phosphoramidic acid, [(trifluoromethyl)sulfonyl]-, diethyl ester,
lithium salt (9CI) (CA INDEX NAME)



● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35, 72

ST lithium imide salt rechargeable battery polymer
electrolyte film cond

IT Secondary batteries

(lithium; recent advances in lithium-ion and
lithium-polymer batteries)

IT Battery anodes

Battery cathodes

Battery electrolytes

Ionic conductivity

Polymer electrolytes

X-ray diffraction

(recent advances in lithium-ion and lithium
-polymer batteries)

IT Fluoropolymers, uses

(recent advances in lithium-ion and lithium
-polymer batteries)

IT Macromonomers

(recent advances in lithium-ion and lithium
-polymer batteries)

IT Polyoxyalkylenes, reactions

(recent advances in lithium-ion and lithium
-polymer batteries)

IT 7782-42-5, Graphite, uses

(MCMB, anode; recent advances in lithium-ion
and lithium-polymer batteries)

- IT 2699-79-8D, Sulfonyl fluoride, perfluoroalkyl
(Perfluoroalkyl; recent advances in lithium-ion and
lithium-polymer batteries)
- IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 132843-44-8
(recent advances in lithium-ion and lithium
-polymer batteries)
- IT 7440-44-0, Carbon, uses
(recent advances in lithium-ion and lithium
-polymer batteries)
- IT 9003-07-0P, Celgard 2300
(recent advances in lithium-ion and lithium
-polymer batteries)
- IT 13463-67-7, Titanium oxide (TiO2), uses 24937-79-9, Polyvinylidene
fluoride
(recent advances in lithium-ion and lithium
-polymer batteries)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 600-00-0,
Ethyl 2-bromo isobutyrate 616-38-6, Dimethylcarbonate 7440-50-8,
Copper, uses 63310-83-8, Dicopper dibromide
(recent advances in lithium-ion and lithium
-polymer batteries)
- IT 189217-56-9 210227-37-5 338746-29-5 338746-30-8
447448-05-7 447448-06-8 447448-07-9 447448-08-0 447448-09-1
447448-10-4 447448-11-5 447448-12-6 447448-13-7 447448-14-8
447448-15-9
(recent advances in lithium-ion and lithium
-polymer batteries)
- IT 176719-70-3P
(recent advances in lithium-ion and lithium
-polymer batteries)
- IT 109-72-8, n-Butyllithium, reactions 375-72-4, Perfluorobutylsulfonyl
fluoride 7664-41-7, Ammonia, reactions 25322-68-3, Polyethylene
oxide 37275-48-2, Dipyrindyl 87105-87-1, Poly(ethylene glycol)
methyl ether methacrylate homopolymer
(recent advances in lithium-ion and lithium
-polymer batteries)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L45 ANSWER 27 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:185513 HCAPLUS Full-text

DOCUMENT NUMBER: 136:203115

TITLE: Additive for secondary nonaqueous
electrolyte battery and double
layer capacitor, the battery, and the
capacitor

INVENTOR(S): Otsuki, Masashi; Endo, Shigeki; Ogino, Takao

PATENT ASSIGNEE(S): Bridgestone Corporation, Japan

SOURCE: PCT Int. Appl., 35 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2002021631	A1	20020314	WO 2001-JP7692	20010905
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,				

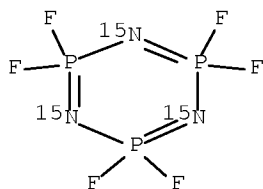
10/518,634

CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
 LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
 NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
 TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,
 TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
 TD, TG

AU 2001084432 A 20020322 AU 2001-84432 20010905
 CA 2422109 A1 20030307 CA 2001-2422109 20010905
 EP 1329975 A1 20030723 EP 2001-963433 20010905
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 US 20030175598 A1 20030918 US 2003-363542 20030305
 US 7099142 B2 20060829

PRIORITY APPLN. INFO.: JP 2000-272082 A 20000907
 JP 2000-272083 A 20000907
 WO 2001-JP7692 W 20010905

ED Entered STN: 15 Mar 2002
 AB The additive contains a phosphazene derivative (PNF₂)₃-14.
 IT 72924-67-5
 (cyclic phosphazene additives in nonaq. electrolyte
 solns. for secondary lithium batteries and
 double layer capacitors)
 RN 72924-67-5 HCAPLUS
 CN 1,3,5,2,4,6-Triazatriphosphorine-1,3,5-¹⁵N₃, 2,2,4,4,6,6-hexafluoro-
 2,2,4,4,6,6-hexahydro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M006-16; H01G009-038
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary nonaq battery phosphazene deriv additive; double
 layer capacitor phosphazene deriv additive
 IT Battery electrolytes
 (cyclic phosphazene additives in nonaq. electrolyte
 solns. for secondary lithium batteries)
 IT Cyclophosphazenes
 (cyclic phosphazene additives in nonaq. electrolyte
 solns. for secondary lithium batteries and
 double layer capacitors)
 IT Capacitors
 (double layer; cyclic phosphazene additives in nonaq.
 electrolyte solns. for double layer capacitors)
 IT 108-32-7, Propylene carbonate 429-06-1, Tetraethylammonium

tetrafluoroborate

(cyclic phosphazene additives in nonaq. electrolyte
solns. for double layer capacitors)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
14283-07-9, Lithium fluoroborate 21324-40-3,
Lithium hexafluorophosphate

(cyclic phosphazene additives in nonaq. electrolyte
solns. for secondary lithium batteries)

IT 72924-67-5

(cyclic phosphazene additives in nonaq. electrolyte
solns. for secondary lithium batteries and
double layer capacitors)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L45 ANSWER 28 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:179534 HCAPLUS Full-text

DOCUMENT NUMBER: 134:342446

TITLE: New and novel lithium imide
electrolytes and copolymers: Synthesis and
characterization for lithium
rechargeable batteries

AUTHOR(S): Venkatesetty, H. V.

CORPORATE SOURCE: H.V. Setty Enterprises, Inc., Burnsville, MN, USA

SOURCE: Annual Battery Conference on Applications and
Advances, 16th, Long Beach, CA, United States,
Jan. 9-12, 2001 (2001), 277-282. Editor(s): Das,
Radhe S. L.; Frank, Harvey. Institute of
Electrical and Electronics Engineers: New York, N.
Y.

CODEN: 69BADB

DOCUMENT TYPE: Conference

LANGUAGE: English

ED Entered STN: 15 Mar 2001

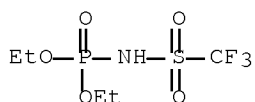
AB Several new and novel Lithium imide salts were synthesized and characterized
for their conductivities and electrochem. stabilities in nonaq. solvent mixts.
Many copolymers and diblock copolymers using monomers such as polyethylene
glycol methacrylate of different mol. wts. and/or poly(lauryl methacrylate)
were synthesized and characterized. Solid polymer electrolytes with promising
Li salts and copolymers were prepared with different Li/O ratios and varying
ratios of copolymers and polyethylene oxide with inert additives. Their
conductivities and electrochem. stabilities were measured. All Lithium imide
salts and copolymer-based solid polymer electrolyte films are found to be
stable from 0 to 4.5 V vs. Li. The solubilities and the conductivities of Li
imide salts are found to depend on their structure. The phys. properties of
copolymers are known to depend on the type and the mol. weight of the monomer
used and the polymerization process. The solid polymer electrolyte films
containing a large fraction of the copolymers in the mixture with polyethylene
oxide and Li salts show much improved conductivity at room temperature Both
the solid polymer electrolyte films and the Li imide salt solns. have been
used in Li cells to evaluate their performance. The performance data of cells
with these electrolytes are discussed in terms of their structures and compns.

IT 338746-30-8P

(synthesis and characterization of lithium imide
electrolytes and copolymers for lithium
rechargeable batteries)

RN 338746-30-8 HCAPLUS

CN Phosphoramidic acid, [(trifluoromethyl)sulfonyl]-, diethyl ester,
lithium salt (9CI) (CA INDEX NAME)



● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST lithium battery lithium imide
 electrolyte copolymer
 IT Secondary batteries
 (lithium; synthesis and characterization of
 lithium imide electrolytes and copolymers for
 lithium rechargeable batteries)
 IT Polyoxyalkylenes, uses
 (polymers, complexes with lithium trifluoromethylsulfonyl
 perfluorobutylsulfonamide; synthesis and characterization of
 lithium imide electrolytes and copolymers for
 lithium rechargeable batteries)
 IT Battery electrolytes
 Electric conductivity
 (synthesis and characterization of lithium imide
 electrolytes and copolymers for lithium
 rechargeable batteries)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6,
 Dimethyl carbonate
 (synthesis and characterization of lithium imide
 electrolytes and copolymers for lithium
 rechargeable batteries)
 IT 25322-68-3DP, Polyethylene glycol, polymers, complexes with
 lithium trifluoromethylsulfonyl perfluorobutylsulfonamide
 176719-70-3P 338746-27-3P 338746-28-4P 338746-29-5P
 338746-30-8P
 (synthesis and characterization of lithium imide
 electrolytes and copolymers for lithium
 rechargeable batteries)
 IT 13463-67-7, Titania, uses
 (synthesis and characterization of lithium imide
 electrolytes and copolymers for lithium
 rechargeable batteries)
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L45 ANSWER 29 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 1998:686074 HCAPLUS Full-text
 DOCUMENT NUMBER: 130:25419
 TITLE: Polyphosphazenes with Novel Architectures:
 Influence on Physical Properties and Behavior as
 Solid Polymer Electrolytes
 AUTHOR(S): Allcock, Harry R.; Sunderland, Nicolas J.;
 Ravikiran, Ramakrishna; Nelson, James M.
 CORPORATE SOURCE: Department of Chemistry, The Pennsylvania State

SOURCE: University, University Park, PA, 16802, USA
 Macromolecules (1998), 31(23), 8026-8035
 CODEN: MAMOBX; ISSN: 0024-9297
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

ED Entered STN: 30 Oct 1998

AB Three types of polyphosphazenes with different architectures have been synthesized and characterized. The influence of the polymer architecture on solid ionic conductivity was of particular interest. The first type includes linear oligo- and polyphosphazenes with the general formula $[N:P(OCH_2CH_2OCH_2CH_2OCH_3)_2]_n$ (MEEP) with different chain lengths. The second type consists of a series of tri-armed star-branched polyphosphazenes with the general formula $N\{CH_2CH_2NH(CF_3CH_2O)_2P[N:P(OCH_2CH_2OCH_2CH_2OCH_3)_2]_n\}_3$ with different arm lengths. These were synthesized via the reaction of the tridentate initiator $[N\{CH_2CH_2NH(CF_3CH_2O)_2P:N-PCl_3\}_3][PCl_6]^-$ with the phosphoranimine $Cl_3P:NSiMe_3$ in CH_2Cl_2 followed by halogen replacement with sodium (methoxyethoxy)ethoxide. The mol. wts. in this system were carefully controlled by variation of the monomer-to-initiator ratios, and the effect of polymer mol. weight on solid ionic conductivity was examined. The third polymer system was designed to examine the effect of complex branching on ionic conductivity. Thus, a highly branched polymer containing five branches from a cyclotriphosphazene pendent side group (with 26 ethyleneoxy units per repeat unit) was synthesized. The conductivity of this polymer in the presence of three different salts has been measured and compared to the behavior of MEEP with a corresponding mol. weight. The mechanism of ion transport in these systems is discussed.

IT 188186-00-7 216530-14-2

(initiator used as core for branched polyphosphazenes; preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

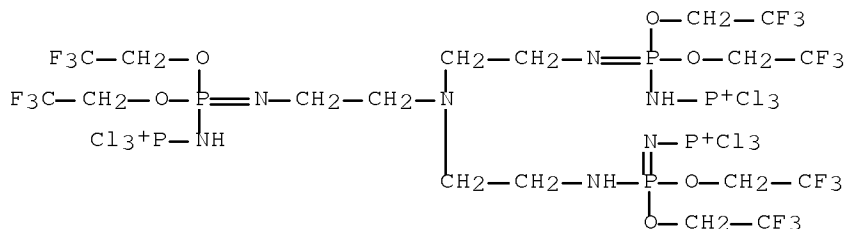
RN 188186-00-7 HCAPLUS

CN Phosphorus(3+), nonachloro[μ_3 -[[hexakis(2,2,2-trifluoroethyl)N,N',N''-(nitritotri-2,1-ethanediyl)tris[phosphoramidimidato- $\kappa N'$]](3-)]tri-, tris[hexachlorophosphate(1-)] (9CI) (CA INDEX NAME)

CM 1

CRN 188185-98-0

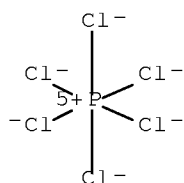
CMF C18 H27 Cl19 F18 N7 O6 P6



CM 2

10/518,634

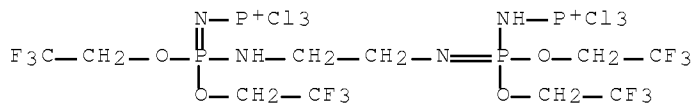
CRN 16920-87-9
CMF C16 P
CCI CCS



RN 216530-14-2 HCAPLUS
CN Phosphorus(2+), hexachloro[μ-[[tetrakis(2,2,2-trifluoroethyl)
N,N''-1,2-ethanediylbis[phosphoramidimidato-κN']](2-)]di-,
bis[hexachlorophosphate(1-)] (9CI) (CA INDEX NAME)

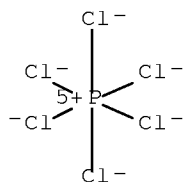
CM 1

CRN 216530-13-1
CMF C10 H14 C16 F12 N4 O4 P4



CM 2

CRN 16920-87-9
CMF C16 P
CCI CCS



CC 35-7 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 37, 52, 76
ST polyphosphazene novel structure lithium complex ionic cond
IT Polymerization
Polymerization
Polymerization catalysts

Polymerization catalysts

(cationic, living; preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT Battery electrolytes

Glass transition temperature

Ionic conductivity

Molecular weight

Polymer electrolytes

(preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT 131841-09-3P

(byproduct in preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT 10026-13-8, Phosphorus pentachloride

(catalyst; preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT 33454-82-9, Lithium triflate

(electrolytes; preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT 188186-00-7 216530-14-2

(initiator used as core for branched polyphosphazenes; preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT 19278-10-5DP, 2-(2-Methoxyethoxy)ethanol sodium salt, reaction

products with poly(dichlorophosphazene), lithium complexes

26085-02-9DP, Poly(dichlorophosphazene), derivs., lithium

complexes 40678-60-2DP, derivs., lithium complexes

(linear and branched; preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT 216530-18-6DP, reaction products with poly(dichlorophosphazene),

lithium complexes

(preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT 7439-93-2DP, Lithium, complexes with polyphosphazenes,

preparation

(preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT 110-87-2 112-27-6 19278-10-5, 2-(2-Methoxyethoxy)ethanol sodium salt

(reactant in preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer electrolytes prepared by complexation of polyphosphazenes with lithium)

IT 60221-37-6P 132939-00-5P 216530-17-5P 216530-18-6P

(reactant in preparation of polyphosphazenes with novel architecture, their phys. properties, and ionic conductivity of solid polymer

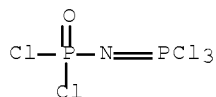
electrolytes prepared by complexation of polyphosphazenes
with lithium)

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L45 ANSWER 30 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 1998:681962 HCAPLUS Full-text
DOCUMENT NUMBER: 129:262843
ORIGINAL REFERENCE NO.: 129:53509a,53512a
TITLE: High conductivity electrolyte solutions
and secondary batteries using the
solutions
INVENTOR(S): Angell, Charles Austen; Zhang, Sheng-Shui; Xu,
Kang
PATENT ASSIGNEE(S): Arizona Board of Regents, USA
SOURCE: U.S., 14 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5824433	A	19981020	US 1996-748009	19961112
PRIORITY APPLN. INFO.:			US 1996-748009	19961112

OTHER SOURCE(S): MARPAT 129:262843
ED Entered STN: 28 Oct 1998
AB The electrolyte solns. contain an electrolyte solute and a sulfonyl/phospho
compound solvent RSO₂X (X = halide and R = perfluoroalkyl group,
perchlorinated group, N:PX₃) or X₃P:NR' [R' = P(O)X₂ or C1-6 alkyl group].
The solvent may contain Cl₃PNSO₂Cl, Cl₃PNP(O)Cl₂, Cl₃PNCH₃, Cl₃PNCH₂CH₃,
and/or CF₃(CF₂)₃SO₂F; and the electrolyte solute os LiAlCl₄ or (CF₃SO₂)₂NLi.
The electrolyte may also contain a polymer.
IT 13966-08-0P
(high conductivity electrolyte solns. containing sulfur-phosphorus
compound electrolyte solvents for secondary
batteries)
RN 13966-08-0 HCAPLUS
CN Phosphorimidic trichloride, (dichlorophosphinyl)- (6CI, 8CI, 9CI) (CA
INDEX NAME)



IC ICM H01M006-14
INCL 429194000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium battery electrolyte solvent;
battery electrolyte solvent sulfur phosphorous compd
IT Battery electrolytes
(high conductivity electrolyte solns. containing sulfur-phosphorus

10/518,634

compound electrolyte solvents for secondary lithium
batteries and sodium/sulfur batteries)

IT 124-63-0, Methanesulfonyl chloride 9011-14-7, Pmma 14024-11-4,
Aluminum lithium chloride (LiAlCl₄) 90076-65-6
(high conductivity electrolyte solns. containing sulfur-phosphorus
compound electrolyte solvents for secondary
batteries)

IT 13966-08-0P 14700-21-1P 23453-30-7P 44584-14-7P
(high conductivity electrolyte solns. containing sulfur-phosphorus
compound electrolyte solvents for secondary
batteries)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L45 ANSWER 31 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1997:443306 HCAPLUS Full-text

DOCUMENT NUMBER: 127:53454

ORIGINAL REFERENCE NO.: 127:10137a,10140a

TITLE: Electrochemically stable electrolytes
which do not crystallize at ambient temperature

INVENTOR(S): Angell, Charles Austen; Zhang, Sheng Shui; Xu,
Kang

PATENT ASSIGNEE(S): Arizona Board of Regents, USA

SOURCE: PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9718159	A1	19970522	WO 1996-US18325	19961113
W:	AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN			
RW:	KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG			
US 5855809	A	19990105	US 1996-748008	19961112
AU 9676807	A	19970605	AU 1996-76807	19961113
PRIORITY APPLN. INFO.:			US 1995-6437P	P 19951113
			US 1996-748008	A 19961112
			WO 1996-US18325	W 19961113

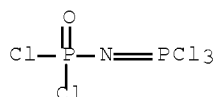
ED Entered STN: 17 Jul 1997

AB The electrolytes are quasi-salt inorg. ionic liqs. which comprise the reaction product of a strong Lewis acid with an inorg. halide-donating mol., which comprises a substructure selected from NPX₃, SO₂X, and C(O)X, where X is a halogen. The strong Lewis acid is selected from AlCl₃, BCl₃, SbCl₃, and FeCl₃. These quasi-salt inorg. ionic liquid mixts. are useful electrolytes.

IT 13966-08-0DP, reaction product with aluminum chloride
(electrochem. stable electrolytes from)

RN 13966-08-0 HCAPLUS

CN Phosphorimidic trichloride, (dichlorophosphinyl)- (6CI, 8CI, 9CI) (CA
INDEX NAME)



IC ICM C01B021-06
ICS C01B025-10; C01C001-02; H01B001-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49

ST battery electrolyte electrochem stable; halide
donating mol Lewis acid electrolyte

IT Battery electrolytes
(electrochem. stable which do not crystallize at ambient temperature)

IT 7446-70-0D, Aluminum chloride (AlCl₃), reaction product with inorg.
halide-donating mol., processes 7705-08-0D, Iron chloride (FeCl₃),
reaction product with inorg. halide-donating mol., processes
10025-91-9D, Antimony chloride (SbCl₃), reaction product with inorg.
halide-donating mol. 10294-34-5D, Boron chloride (BCl₃), reaction
product with inorg. halide-donating mol.
(electrochem. stable electrolytes from)

IT 75-36-5DP, Acetyl chloride, reaction product with aluminum chloride
13966-08-0DP, reaction product with aluminum chloride
14700-21-1DP, reaction product with aluminum chloride 23453-30-7DP,
reaction product with aluminum chloride 44584-14-7DP, reaction
product with boron chloride
(electrochem. stable electrolytes from)

IT 2926-30-9, Sodium trifluoromethanesulfonate 7784-16-9, Sodium
chloroaluminate 14024-11-4, Lithium chloroaluminate
33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6,
Lithium bis(trifluoromethylsulfonyl)imide 91742-21-1, Sodium
bis(trifluoromethylsulfonyl)imide
(quasi-salt inorg. ionic liquid electrolytes containing)

L45 ANSWER 32 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1996:744515 HCAPLUS Full-text

DOCUMENT NUMBER: 126:149660

ORIGINAL REFERENCE NO.: 126:28845a,28848a

TITLE: Room temperature inorganic "quasi-molten salts" as
alkali-metal electrolytes

AUTHOR(S): Xu, K.; Zhang, S.; Angell, C. A.

CORPORATE SOURCE: Dep. Chem., Arizona State Univ., Tempe, AZ,
85287-1604, USA

SOURCE: Journal of the Electrochemical Society (1996),
143(11), 3548-3554

CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 19 Dec 1996

AB Room temperature inorg. liqs. of high ionic conductivity were prepared by
reacting Lewis acid AlCl₃ with sulfonyl chlorides. The mechanism is not clear
at this time since a crystal structure study of the 1:1 complex with CH₃SO₂Cl
(T_m = 30°) is not consistent with a simple chloride transfer to create AlClO₄⁻
anions. The liquid is in a state somewhere between ionic and mol. A new term
quasi-molten salt is adopted to describe this state. A comparably conducting

liquid can be made using BCl_3 in place of AlCl_3 . Unlike their organic counterparts based on ammonium cations (e.g., pyridinium or imidazolium) which reduce in the presence of alkali metals, this inorg. class of cation shows great stability against electrochem. reduction (.apprx. -1.0 V vs. Li^+/Li), with the useful consequence that reversible lithium and sodium metal deposition/stripping can be supported. The electrochem. window for these quasi-salts with AlCl_3 ranges up to 5.0 V, and their room temperature conductivities exceed 10^{-4} S/cm. They dissolve lithium and sodium tetrachloroaluminates up to mole fraction .apprx. 0.6 at 100° and intermediate compns. are permanently stable at ambient. The resultant lithium or sodium salt solns. exhibit electrochem. windows of 4.5-5.0 V vs. Li^+/Li or Na^+/Na and show room temperature conductivities of 10^{-3} to .apprx. 10^{-2} S/cm. In preliminary charge/discharge tests, the cell $\text{Li}/\text{quasi-ionic liquid electrolyte}/\text{Li}_{1+x}\text{Mn}_2\text{O}_4$ showed a discharge capacity of .apprx. 110 mA-h/(g of cathode) and sustained 80% of the initial capacity after 60 cycles, indicating that these quasi-molten salt-based electrolytes are promising candidates for alkali-metal batteries.

IT 186696-43-5P

(ionic conductivity and electrochem. potential window and room temperature inorg. quasi-molten salts as alkali-metal electrolytes)

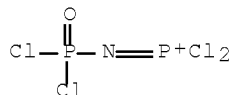
RN 186696-43-5 HCAPLUS

CN Phosphorus(1+), dichloro[phosphoramidic dichloridato(2-)-κN]-, (T-4)-tetrachloroaluminate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 186696-42-4

CMF Cl4 N O P2

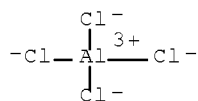


CM 2

CRN 17611-22-2

CMF Al Cl4

CCI CCS

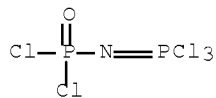


IT 13966-08-0P

(reaction with aluminum chloride: electrochem. potential window and room temperature inorg. quasi-molten salts as alkali-metal electrolytes)

RN 13966-08-0 HCAPLUS

CN Phosphorimidic trichloride, (dichlorophosphinyl)- (6CI, 8CI, 9CI) (CA INDEX NAME)



- CC 72-2 (Electrochemistry)
Section cross-reference(s): 52, 68, 76
- ST room temp inorg quasi molten salt; alkali metal electrolyte
quasi molten salt; sulfonyl aluminum chloride melt electrochem window;
phosphoryl aluminum chloride melt electrochem window; electrochem
potential window sulfonyl phosphoryl chloroaluminate; battery
electrolyte inorg quasi molten salt
- IT Battery electrolytes
(of sulfonyl chloride or phosphoryl chloride compds. with aluminum
chloride)
- IT 14024-11-4, Lithium tetrachloroaluminate
(cyclic voltammetry of trichlorophosphazosulfonyl chloride-aluminum
chloride compound with and without LiAlCl₄ and of LiAlCl₄ in
methanesulfonyl chloride)
- IT 186696-36-6P
(electrochem. potential window and room temperature inorg. quasi-molten
salts as alkali-metal electrolytes)
- IT 186696-38-8P 186696-40-2P 186696-41-3P 186696-43-5P
(ionic conductivity and electrochem. potential window and room temperature
inorg. quasi-molten salts as alkali-metal electrolytes)
- IT 75-36-5, Acetyl chloride 124-63-0, Methanesulfonyl chloride
(reaction with aluminum chloride: electrochem. potential window and
room temperature inorg. quasi-molten salts as alkali-metal
electrolytes)
- IT 6041-61-8P 13966-08-0P 14700-21-1P,
Trichlorophosphazosulfonyl chloride
(reaction with aluminum chloride: electrochem. potential window and
room temperature inorg. quasi-molten salts as alkali-metal
electrolytes)

L45 ANSWER 33 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1996:582562 HCAPLUS Full-text

DOCUMENT NUMBER: 125:252809

ORIGINAL REFERENCE NO.: 125:47151a, 47154a

TITLE: Inorganic electrolyte solutions and gels
for rechargeable lithium
batteries

AUTHOR(S): Xu, Kang; Day, Natalie D.; Angell, C. Austen

CORPORATE SOURCE: Dep. Chem., Arizona State Univ., Tempe, AZ,
85287-1604, USA

SOURCE: Journal of the Electrochemical Society (1996),
143(9), L209-L211

CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

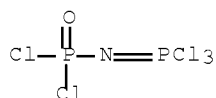
ED Entered STN: 30 Sep 1996

AB A class of inorg. oxychloride compds. have been evaluated for use as electrolytic solvents in rechargeable lithium batteries. Compared with SO₂-based electrolytes, these showed much improved safety while maintaining room temperature conductivities of 10⁻³-10⁻² S/cm and electrochem. voltage windows of 4.5-5.5 V vs. Li⁺/Li and supporting reversible Li metal deposition/stripping. With the addition of 2-5% polymer, the solns. acquire rubbery character with little loss of conductivity and no change in electrochem. stability. Preliminary charge/discharge tests with intercalation-type cathode as well as sulfur-based cathode showed that these inorg. electrolytes can operate with excellent reversibility.

IT 13966-08-0
(solvent; inorg. electrolyte solns. and gels for rechargeable lithium batteries)

RN 13966-08-0 HCAPLUS

CN Phosphorimidic trichloride, (dichlorophosphinyl)- (6CI, 8CI, 9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery inorg electrolyte soln
gel; safety lithium battery inorg
electrolyte oxychloride

IT Battery electrolytes
(inorg. electrolyte solns. and gels for rechargeable lithium batteries)

IT Electric conductivity and conduction
(ionic, inorg. electrolyte solns. and gels for rechargeable lithium batteries)

IT 9011-14-7, Pmma
(electrolyte additive; inorg. electrolyte solns. and gels for rechargeable lithium batteries)

IT 14024-11-4, Lithium tetrachloroaluminate 90076-65-6
(electrolyte; inorg. electrolyte solns. and gels for rechargeable lithium batteries)

IT 124-63-0, Methane sulfonylchloride 13966-08-0 14700-21-1,
Trichlorophosphazosulfonyl chloride
(solvent; inorg. electrolyte solns. and gels for rechargeable lithium batteries)

L45 ANSWER 34 OF 34 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1964:50673 HCAPLUS Full-text

DOCUMENT NUMBER: 60:50673

ORIGINAL REFERENCE NO.: 60:8889f-h, 8890a-b

TITLE: The effect of the direct current on the wetting of graphite by the halides of the first and second metal groups

AUTHOR(S): Zhemchuzhina, E. A.

SOURCE: Poverkhn. Yavleniya v Met. Protsessakh, Sb. Tr. Mezhvuz. Konf., Moscow (1963), Volume Date 1961 81-115

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

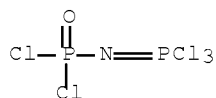
ED Entered STN: 22 Apr 2001

AB In the alkali metal chloride melts in the case of anode polarization, the interfacial tension on the graphite boundary increased in the following way: $\text{RbCl} < \text{KCl} < \text{LiCl} < \text{NaCl}$, as a result of the decrease in the surface activity. In the case of the cathode polarization NaCl was the most surface active. In the range of $\phi = 0.4-2.2$ v., the change of the interfacial tension on the anode had a maximum corresponding to the zero charge of the electrolyte surface, while in the case of cathode polarization, continuous decrease with increasing electroneg. potential was observed. Graphite surface on the contact with molten alkali metal chlorides had a neg. charge. In the alkali metal fluoride melts in both cases of the anode and cathode polarization, KF was the most surface active, LiF the least surface active. In the range of $\phi = 0.4-2.2$ v. the anode electrocapillary curves were distorted, while in the case of the cathode polarization the decrease in the interfacial tension with increasing surface charge revealed the neg. charge of the graphite surface. Surface activity of Cl^- and F on both the anode and the cathode depended on the nature of the univalent cation. In the alkaline earth metal halide melts in the case of the anode polarization, MgCl_2 was surface active on the contact, while CaCl_2 and MgCl_2 were surface inactive. In the case of cathode polarization with increasing neg. charge of the surface, the decrease in the interfacial tension was observed. In the case of binary $\text{NaCl} + \text{KCl}$ melts, KCl is not surface active on the anode, while NaCl is not surface active on the cathode. The electrocapillary curves revealed a neg. charge of the graphite surface. The 10 mol. % addns. of alkali metal and alkaline earth metal chlorides and fluorides to NaF showed that, in the case of anode polarization, the maximum on the electrocapillary curves corresponded to a zero charge of the electrode surface, which revealed the pos. charge of the graphite. Also, the addns. of alkali chlorides caused a decrease in the wetting of graphite in comparison with the unpolarized graphite. KCl was the most surface active, CaCl_2 was more surface active than MgCl_2 . The graphite surface in all these melts without the outer polarization had a neg. charge. The comparison of the fluorides and chlorides, having the same cation, showed that fluorides were more surface active on the anode and chlorides on the cathode.

IT 13966-08-0P, Phosphoramidic dichloride,
(trichlorophosphoranylidene)-
(preparation of)

RN 13966-08-0 HCAPLUS

CN Phosphorimidic trichloride, (dichlorophosphinyl)- (6CI, 8CI, 9CI) (CA
INDEX NAME)



CC 15 (Electrochemistry)

IT Polarization (electrolytic)

(of graphite wetting by fused halides and)

IT 7447-40-7, Potassium chloride 7447-41-8, Lithium chloride

7647-14-5, Sodium chloride 7786-30-3, Magnesium chloride

7789-23-3, Potassium fluoride, KF 7789-24-4, Lithium

fluoride 7791-11-9, Rubidium chloride 10043-52-4, Calcium chloride

(graphite wetting by fused, polarization and)

IT 13966-08-0P, Phosphoramidic dichloride,

10/518,634

(trichlorophosphoranylidene)-
(preparation of)

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(FILE 'HOME' ENTERED AT 10:36:12 ON 07 AUG 2008)

FILE 'HCAPLUS' ENTERED AT 10:37:35 ON 07 AUG 2008

L1 1 SEA ABB=ON PLU=ON US20050164093/PN
SEL RN

FILE 'REGISTRY' ENTERED AT 10:38:00 ON 07 AUG 2008

L2 18 SEA ABB=ON PLU=ON (105-58-8/BI OR 108-32-7/BI OR
110-71-4/BI OR 1313-13-9/BI OR 134435-36-2/BI OR 25322-68-3
/BI OR 33027-66-6/BI OR 485399-26-6/BI OR 52627-24-4/BI OR
55593-38-9/BI OR 593094-52-1/BI OR 639065-14-8/BI OR
639065-15-9/BI OR 639067-35-9/BI OR 639067-36-0/BI OR
639067-37-1/BI OR 7439-93-2/BI OR 96-49-1/BI)
L3 10 SEA ABB=ON PLU=ON L2 AND P/ELS
L4 8 SEA ABB=ON PLU=ON L2 NOT L3

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L5 39 SEA ABB=ON PLU=ON L3

FILE 'REGISTRY' ENTERED AT 10:39:50 ON 07 AUG 2008

L6 STR
L7 50 SEA SSS SAM L6
L8 919149 SEA ABB=ON PLU=ON (P(L)N)/ELS
L9 10 SEA ABB=ON PLU=ON L8 AND L2
L10 895682 SEA ABB=ON PLU=ON L8 NOT PMS/CI
L11 2814 SEA ABB=ON PLU=ON L10 AND 46.716/RID AND 46.150/RID
L12 15 SEA ABB=ON PLU=ON L11 AND LI/ELS
L13 3 SEA ABB=ON PLU=ON L12 AND L2
L14 485953 SEA ABB=ON PLU=ON L10 AND 46.150/RID
L15 1869 SEA ABB=ON PLU=ON L14 AND LI/ELS
L16 5 SEA ABB=ON PLU=ON L15 AND 6/N AND 1/O
L17 105 SEA ABB=ON PLU=ON L10 AND IMINOIMIDODIPHOSPHORAMID?
L18 1 SEA ABB=ON PLU=ON L17 AND LI/ELS
L19 296678 SEA ABB=ON PLU=ON L8 AND X/ELS
L20 13143 SEA ABB=ON PLU=ON L19 AND PHOSPHORAMID?
L21 5238 SEA ABB=ON PLU=ON L20 AND (SI OR GE OR SN OR AS OR SB OR
BI OR S OR SE OR TE OR PO)/ELS
L22 64 SEA ABB=ON PLU=ON L8 AND F/ELS AND 3/ELC.SUB
L23 777044 SEA ABB=ON PLU=ON L8 AND O/ELS
L24 193937 SEA ABB=ON PLU=ON L23 AND (SI OR GE OR SN OR AS OR SB OR
BI OR S OR SE OR TE OR PO)/ELS
L25 0 SEA ABB=ON PLU=ON L24 AND L2
L26 584 SEA ABB=ON PLU=ON L24 AND PHOSPHINIC AMIDE?

FILE 'HCAPLUS' ENTERED AT 11:58:05 ON 07 AUG 2008

L27 13 SEA ABB=ON PLU=ON L12
L28 1 SEA ABB=ON PLU=ON L18
L29 13 SEA ABB=ON PLU=ON L27 OR L28
L30 45 SEA ABB=ON PLU=ON L17
L31 3 SEA ABB=ON PLU=ON L30 AND LITHIUM
L32 15 SEA ABB=ON PLU=ON L29 OR L31
L33 1 SEA ABB=ON PLU=ON L30 AND ELECTROLYT?
L34 QUE ABB=ON PLU=ON BATTERY? OR BATTERIES OR ELECTRODE# OR
CATHODE# OR ANODE#
L35 1 SEA ABB=ON PLU=ON L30 AND L34
L36 15 SEA ABB=ON PLU=ON L32 OR L33 OR L35

10/518,634

L37	2188	SEA	ABB=ON	PLU=ON	L21
L38	25626	SEA	ABB=ON	PLU=ON	L20
L39	322	SEA	ABB=ON	PLU=ON	L26
L40	337	SEA	ABB=ON	PLU=ON	L22
L41	26191	SEA	ABB=ON	PLU=ON	(L37 OR L38 OR L39 OR L40)
L42	155	SEA	ABB=ON	PLU=ON	L41 AND L34
L43	48	SEA	ABB=ON	PLU=ON	L42 AND ELECTROLYT?
L44	34	SEA	ABB=ON	PLU=ON	L43 AND LITHIUM
L45	34	SEA	ABB=ON	PLU=ON	L44 NOT